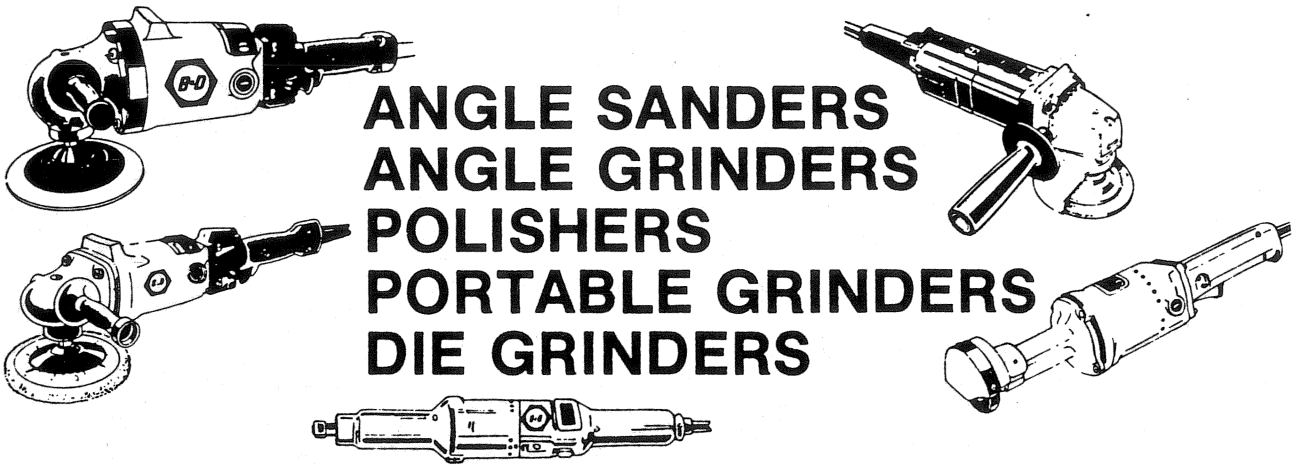
BLACK&DECKER™

INSTRUCTION MANUAL



ANGLE SANDERS
ANGLE GRINDERS
POLISHERS
PORTABLE GRINDERS
DIE GRINDERS

IMPORTANT SAFETY INSTRUCTIONS (FOR ALL TOOLS)

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

READ ALL INSTRUCTIONS

1. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite injuries.
2. **CONSIDER WORK AREA ENVIRONMENT.** Don't expose power tools to rain. Don't use power tools in damp or wet locations. Keep work area well lit.
3. **GUARD AGAINST ELECTRIC SHOCK.** Prevent body contact with grounded surfaces. For example: pipes, radiators, ranges, refrigerator enclosures.
4. **KEEP CHILDREN AWAY.** All visitors should be kept away from work area. Do not let visitors contact tool or extension cord.
5. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, and high or locked-up place—out of reach of children.
6. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was intended.
7. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy-duty tool Don't use tool for purpose not intended, for example, don't use circular saw for cutting tree limbs or logs.
8. **DRESS PROPERLY.** Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
9. **USE SAFETY GLASSES.** Also use face or dustmask if cutting operation is dusty.
10. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
11. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safe performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and if damaged have repaired by authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean and free from oil and grease.
14. **DISCONNECT TOOLS.** When not in use, before servicing, and when changing accessories, such as blades, bits, cutters.
15. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
16. **AVOID UNINTENTIONAL STARTING.** Don't carry plugged-in tool with finger on switch. Be sure switch is off when plugging in.
17. **OUTDOOR USE EXTENSION CORDS.** When tool is used outdoors, use only extension cords intended for use outdoors and so marked.
18. **STAY ALERT.** Watch what you are doing. Use common sense. Do not operate tool when you are tired.
19. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this instruction manual. Have defective switches replaced by authorized service center. Do not use tool if switch does not turn it on and off.
20. **DO NOT OPERATE** portable electric tools near flammable liquids or in gaseous or explosive atmospheres. Motors in these tools normally spark, and the sparks might ignite fumes.

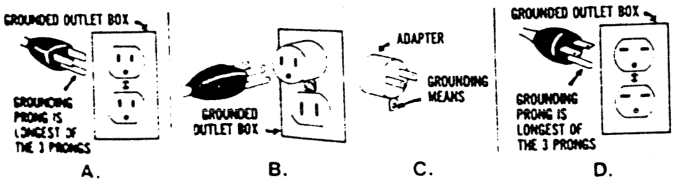
SAFETY RULES FOR SANDERS AND GRINDERS

1. Always wear safety goggles or other eye protection when using this tool.
2. When grinding, always keep guard in place.
3. Use only grinding wheels having a maximum operating speed at least as high as "NO LOAD RPM" marked on the tool's nameplate. This precaution also applies to any accessory on any tool.
4. Before using, inspect recommended accessory for cracks or flaws. If such a crack or flaw is evident—discard the wheel! The wheel should also be inspected whenever you think the tool may have been dropped.
5. When starting the tool (with a new or replacement wheel installed) hold the tool in a well protected area and let it run for one minute. If the wheel has an undetected crack or flaw, it should burst in less than one minute. Never start the tool with a p-rson in line with the wheel. This includes the operator.
6. In operation, avoid bouncing the wheel or giving it rough treatment. If this occurs, stop the tool and inspect the wheel.
7. Always use guards with depressed-center or flaring cup grinding wheels.
8. Clean your tool out periodically following the procedure in the maintenance section.
9. When using a 3 wire sander or grinder on job sites where arc or resistance welding is being performed, the cord set on this tool could be damaged by heavy welding currents using the cord as a parallel return path. To maintain the protection the ground wire provides, the cord should be inspected frequently and replaced as necessary. Avoid unnecessary contact between the metallic exterior of the tool and grounded conductive surfaces.

FOR TOOLS EQUIPPED WITH 3-WIRE CORD & REQUIRE GROUNDING, PLEASE READ THE FOLLOWING:

GROUNDING

This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with an approved three-conductor cord and three prong grounding type plug to fit the proper grounding type receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal. If your unit is for use on less than 150 volts, it has a plug like that shown in Figure A. If it is for use on 150 to 250 volts, it has a plug like that shown in Figure D. An adapter, Figures B and C, is available for connecting Figure A plugs to two-prong receptacles. The green-colored rigid ear, lug, etc., must be connected to a permanent ground such as a properly grounded outlet box. No adapter is available for a plug as shown in Figure D. ADAPTER SHOWN IN FIGURES B & C IS NOT FOR USE IN CANADA.



A. B. C. D.

FOR TOOLS EQUIPPED WITH 2-WIRE CORDS, AND ARE DOUBLE INSULATED, PLEASE READ THE FOLLOWING:

DOUBLE INSULATION

DOUBLE-INSULATED tools are constructed throughout with TWO separate "layers" of electrical insulation or one DOUBLE thickness of insulation between you and the tool's electrical system.

Tools built with this insulation system are not intended to be grounded. As a result, your tool is equipped with a two-prong plug which permits you to use extension cords without concern for maintaining a ground connection.

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

CAUTION: When servicing all tools, USE ONLY IDENTICAL REPLACEMENT PARTS. Repair or replace damaged cords.

EXTENSION CORDS

Double insulated tools have 2-wire cords and can be used with 2-wire or 3-wire extension cords. Tools that have 3-wire cords requiring grounding must only be used with extension cords that have 3-prong grounding type plugs and 3-pole receptacles. Make sure which construction your tool is before choosing an extension cord. Only round jacketed extension cords should be used, and we recommend that they be listed by Underwriters Laboratories (U.L.) (C.S.A. in Canada). If the extension will be used outside, the cord must be suitable for outdoor use. Any cord marked as outdoor can also be used for indoor work. The letter "WA" on the cord jacket indicate that the cord is suitable for outdoor use.

An extension cord must have adequate wire size (AWG or American Wire Gauge) for safety, and to prevent loss of power and overheating. The smaller the gauge number of the wire, the greater the capacity of the cable, that is 16 gauge has more capacity than 18 gauge. When using more than one extension to make up the total length, be sure each individual extension contains at least the minimum wire size.

To determine the minimum wire size required, refer to the chart below.

CHART FOR MINIMUM WIRE SIZE (AWG) OF EXTENSION CORDS

NAMEPLATE RATING-AMPS	TOTAL EXTENSION CORD LENGTH - FEET							
	25	50	75	100	125	150	175	200
0-10.0	18	18	16	16	14	14	12	12
10.1-13.0	16	16	14	14	14	12	12	12
13.1-15.0	14	14	12	12	12	12	12	—

Before using an extension cord, inspect it for loose or exposed wires, damaged insulation, and defective fittings. Make any needed repairs or replace the cord if necessary. Black & Decker has extension cords available that are U.L. (C.S.A. in Canada) listed for outdoor use.

SAVE THESE INSTRUCTIONS

THE FOLLOWING INFORMATION COVERS VARIOUS CONSTRUCTIONS OF BLACK & DECKER TOOLS. PLEASE SELECT THE APPROPRIATE INSTRUCTIONS FOR YOUR MODEL TOOL.

SWITCH OPERATION

PADDLE SWITCH (FIG. 1)

To start the grinder, slide the paddle to the rear of the tool while you are depressing it at the same time. To turn the tool off, release the paddle. The switch can be locked on by engaging the lock button located near the rear of the tool while holding the paddle depressed. Always be sure that the tool is not locked on before plugging the tool in. To turn the tool off when it is locked on, squeeze and release the paddle once.

TRIGGER SWITCH (FIG. 2)

The "ON-OFF" switch is operated by depressing and releasing the trigger switch. Depressing trigger turns the tool "ON"-Releasing it turns the tool "OFF". To lock the switch "ON", depress the trigger fully, press and hold in the locking button, and release trigger switch. Release locking button and tool will stay "ON". To then turn tool "OFF", depress and release trigger switch.

CAUTION: Grasp tool firmly with both hands before starting tool.

SLIDE SWITCH (FIG. 3)

TO LOCK SWITCH ON-Push button with a forward and downward motion and release. Switch is locked on automatically.

TO RELEASE, OR SHUT TOOL OFF-Push slide bar forward and release as shown. (FIG. 3)

On other Portable and Die Grinders, TOGGLE, ROCKER or SLIDE SWITCHES are used. In all cases the "ON" or "OFF" positions are marked on the switch housing.

TO INSTALL AUXILIARY HANDLE (FIG. 4)

An auxiliary handle is furnished with your grinder and can be installed on either side of the front housing. This handle SHOULD BE USED AT ALL TIMES to maintain complete control of the tool.

SANDING WITH ABRASIVE DISCS (FIG. 5)

To Install Sanding Discs:

Be sure that the tool is unplugged. Push the hub of the Disc Nut through the center of the Sanding Disc, as far as it will go, and also through the Backing Disc. Put the Disc Backup on the tool spindle where required. Engage the Disc Nut Hub with the tool spindle and thread the assembly clockwise, completely down on the spindle. Hold the spindle with a wrench, or engage the lock pin if your tool is equipped with one.

When using an abrasive disc, hold the tool so that an angle of 10° to 15° exists between the disc and the work. If only the outer edge of the sanding disc is used a rough cut surface will result. If the sanding disc is pressed flat against the work the sanding action will be irregular and bumpy, and the tool will be difficult to control.

REMOVING DISC (FIG. 6)

Using a cloth or glove to protect your hand, turn the disc assembly counter-clockwise to remove it from the tool spindle. Hold the spindle with a wrench or engage Lock Pin.

GRINDING WITH DEPRESSED-CENTER WHEELS (ANGLE GRINDERS ONLY) (FIG. 7)

Depressed center wheels may be used for moderate metal removal on flat or contoured surfaces.

CAUTION:
Never use Depressed Center Wheels without the proper guard.

To Install Depressed Center Wheels:

1. Be sure tool is disconnected from power supply and switch is in "OFF" position.
2. Be sure the guard assembly is securely attached to the spindle housing.
3. Put the backing flange onto the tool spindle.
4. Check rated speed on depressed center wheel. Never use wheel with rated speed lower than the speed on the name-plate of the tool.
5. Place the Depressed Center Wheel on the tool spindle.
6. Thread the Clamp Washer on tool spindle, hold the tool spindle by engaging the Lock Pin, and tighten Clamp Washer with Spanner Wrench.

When using a Depressed Center Wheel, hold the tool so that an angle of approximately 30° exists between the wheel and the work.

WIRE BRUSHING

1. Disconnect tool from power source. Rest Grinder on its back with spindle facing up.
2. Thread brushes onto spindle and tighten.
3. Common applications for knotted wire cup brush includes cleaning welds, angles, corners and for paint removal.
4. Usage of the knotted wire wheel brush is the same as the wire cup brush. Also they can be used to finish irregular surfaces and corners.

OPERATION (FIG. 8)

GRINDING (PORTABLE GRINDERS ONLY)

To Install Grinding Wheels:

1. UNPLUG ELECTRIC CORD AND BE SURE THAT SWITCH REMAINS IN THE "OFF" POSITION.
2. Remove or unlatch and pivot away Wheel Guard Cover.
3. Remove Mounting Nut by turning it counter-clockwise (when facing outer side of wheel). The spindle can be held stationary by -
   a. Inserting and holding a suitable pin in one of the holes provided in the spindle collar, next to the inward side of the wheel (5" and 6" Portable Grinders).
   b. Holding a wrench on the "flats" provided on the exposed portion of the spindle (2½" Portable Grinder).
4. When installing the new grinding wheel, always use blotters between the wheel and each surface it contacts (all Grinders). For 5" and 6" Portable Grinders, use the clamp washers, supplied with the tool, on either side of the grinding wheel.
5. Only tighten arbor nut sufficiently to drive the wheel without slippage.
6. Be sure to replace guard end cover.
7. When starting the tool (with a new or replacement wheel installed) hold the tool in a well protected area. If the wheel has an undetected crack or flaw, it should burst in less than one minute. Never start the tool with a person in line with the wheel. This includes the operator.

Put the work in a vise or clamp it securely. Use a face mask over the nose and mouth if the operation raises dust. Treat the wheel with respect ... do not jam the wheel into the work or use unnecessary pressure. Grind only on the face of the wheel, unless you have a special wheel specifically made to permit grinding on the side of the wheel.

FLARING CUP WHEELS & GUARDS (FIG. 9)

ALWAYS USE PROPER GUARD

Using Flaring Cup Wheels for smoothing welds, casting ridges, or large metal areas, cutting off studs, bolts, rivets, etc. A ⅝"-11 thread bushing in the wheel threads directly on the tool spindle. Flaring Cup Wheels should only be used in conjunction with the correct size adjustable skirt guard. Disconnect the tool from the power supply. Attach guard with the **open** part of the guard facing **away** from the operator. Tighten mounting screws to secure guard in place. Hold down the spindle lock button and thread the Flaring Cup Wheel onto the spindle. Be sure that the wheel is firmly and completely threaded onto the spindle. Loosen screws holding the adjustable skirt part of the guard and slide the skirt until about a ¼" of the Flaring Cup Wheel is exposed. Tighten screws. When using tool, tilt tool slightly-do not hold Wheel perfectly flat against the work. Avoid bouncing the Wheel or giving it rough treatment, since cracks might develop which would cause the Wheel to fly apart. Always check the Wheel for cracks before using it, and always use a Wheel Guard.

POLISHING (FIG. 10)

Attaching Pads

BE SURE THE TOOL IS UNPLUGGED! Push the hub of the clamp washer through the hole in the center of the Polishing Pad as far as it will go. Engage the hexagonal Clamp Washer hub with the hexagonal hole in the Backing Pad. Holding the three pieces firmly together, place the assembly on the tool spindle. Hold the spindle lock button while turning the pads clockwise to thread them completely on the spindle.

To remove pads, turn them by hand in the opposite direction from normal rotation to allow lock button to engage spindle, then unscrew pads in normal direction for right hand thread.

If you are using a Polishing Bonnet, rather than a Pad, put clamp washer on first, pull Bonnet completely over backing pad and pull draw strings tight. Tie bow knot and push knot and all loose string completely under the inside, cloth edge of the Polishing Bonnet.

Polishing Operation

These instructions and suggestions are intended to familiarize new operators in overall general operation of POWER POLISHING. You will develop your own techniques which will make the job easier and faster as you learn power polishing.

As mentioned previously you should use utmost care when power polishing around or over sharp objects and contours of the car body. It is very important to use the correct pressure while polishing various sections of an automobile body. For example, light pressure should be applied when polishing over sharp edges of body panels, or over edges of the rain gutter along the top.

Since everyone does not use the same type of Power Polish, we recommend you clean and polish a test section on a flat area of the car FIRST. From this test section, you can judge the strength or cleaning action of your Power Polish.

Remember, all Power Polish is not the same. Different brands will react differently on various painted surfaces. Also, you are now using a POWER POLISHER with Power Polish. This is entirely different from any hand application which you may have done before. Wash the car before power polishing it. Washing will remove loose dirt, scum, road salt, etc. which could act as an abrasive and damage paint. Loose dirt, etc. will also clog the polishing pad and you will have to clean it more often.

Without turning tool "ON", grasp the handles of the tool and pick it up. Keep the tool away from your body and turn the switch "ON". Make sure you have a firm grip on the handles and operate the tool freely without forced effort or unnecessary pressure. The side handle can be easily changed to either side of the tool for left-handed or right-handed operation.

Note:

The high speed rubbing action of the polishing bonnet upon the surface of an automobile can build a static charge on the metal portions of this tool. This can result in a sensation of a very short mild electric shock when the metal area of the tool is touched, and will be more noticeable on days when the humidity is low. This is a harmless phenomenon but the tool owner is invited to bring the tool to a Black & Decker Service Branch where it can be checked to assure that no electrical malfunction is present.

MAINTENANCE OF TOOL

CLEANING

Blowing dust and grit out of the motor housing using compressed air is a necessary regular maintenance procedure. Dust and grit containing particles from metal filing often accumulate on interior surfaces and could create an electrical shock hazard if not frequently cleaned out.

FOR UNITS EQUIPPED WITH BRUSH COVER PLATES OR DUST SEALS. (7" & 9" ANGLE SANDERS & GRINDERS.)

The Dust Seal prevents dust and dirt accumulation around the commutator and brushes and should be scraped clean every 300 hours of tool operation. To inspect or clean Dust Seal, first disconnect tool from the power supply. Next, remove the 2 Brush Cover inspection Plates located in front of the switch handle. Dust Seal will then be accessible.

The Brush Cover Inspection Plates (and the attached screens on the Super-Duty tools) may be cleaned in the following manner: (1) Disconnect tool from power supply; (2) Remove Plates from tool and wash Plates in cleaning fluid; (3) Blow out loose particles from Plates with an air hose.

CAUTION: Never use solvents or other harsh chemicals for cleaning the non-metallic parts of the tool. Use clean, dry rag only.

LUBRICATION

B & D tools are properly lubricated at the factory and are ready for use. Tools should be relubricated regularly every sixty days to six months, depending on usage. (Tools used constantly on production or heavy-duty jobs and tools exposed to heat may require more frequent lubrication.) This lubrication should only be attempted by trained power tool repairmen such as men at B & D Service Centers or in other qualified service organizations.

MOTOR BRUSHES

(For tools with external brush caps)

Be sure tool is unplugged before inspecting brushes. Carbon Brushes should be regularly inspected for wear. To inspect brushes, unscrew the plastic brush inspection caps (located in the sides of the motor housing) and the spring and brush assemblies may be withdrawn from the tool.

Keep brushes clean and sliding freely in their guides. Carbon brushes have varying symbols stamped into them, and if the brush is worn down to the line closest to the spring, they must be replaced. New brush assemblies are available at Service Centers; see TOOLS, ELECTRIC in the Yellow Pages.

For 4" & 4½" Angle Grinder

Your tool is equipped with the Black & Decker brush checkpoint system. When the brushes become worn out, the tool will automatically stop and prevent damage to the motor. Brush replacement should be performed by Black & Decker service centers or other qualified service organizations.

ACCESSORIES

NOTE: USE ACCESSORIES RECOMMENDED PER CHART BELOW:

ACCESSORY	4" & 4 1/2" ANGLE GRINDER	5" ANGLE GRINDER	7" ANGLE GRINDER	9" ANGLE GRINDER	5" & 6" PORTABLE GRINDERS	DIE GRINDERS	7" & 9" ANGLE SANDERS	POLISHERS
*DEPRESSED CENTER GRINDING WHEELS	X USE GUARD SUPPLIED WITH TOOL	X USE GUARD SUPPLIED WITH TOOL	X USE GUARD CAT. NO. 50885	X USE GUARD CAT. NO. 37109	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE
SANDING DISCS	X	X	X	X	DO NOT USE	DO NOT USE	X	DO NOT USE
WIRE BRUSHES	X MAX. 4" KNOTTED WHEEL MAX. 2 3/4" CUP WHEEL	X	X	X	DO NOT USE	DO NOT USE	X	DO NOT USE
RANDOM ORBIT BUFFING HEAD	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	X
POLISHING BONNETS	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	X
COTTON BUFFING WHEELS	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	X	DO NOT USE	DO NOT USE	DO NOT USE
MOUNTED STONES & POINTS	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	X	DO NOT USE	DO NOT USE
GRINDING WHEELS	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE	X USE GUARD SUPPLIED WITH TOOL	DO NOT USE	DO NOT USE	DO NOT USE
FLARING CUP GRINDING WHEELS	DO NOT USE	DO NOT USE	X **	X **	DO NOT USE	DO NOT USE	DO NOT USE	DO NOT USE

*Depressed Center Grinding Wheels must fit within the confines of the guard and must be rated higher than the recommended speed as marked on the nameplate.

**When using Flaring Cup Wheels, always use Cat. #38517 4", or Cat # 38518 5", or Cat. #38519 6" Skirt Guard.

WARNING—To reduce the risk of injury, always use proper guards when grinding and wear eye protection.

The accessories listed in this manual are available at extra cost from your local dealer or Black & Decker Service Center. A complete listing of service centers is included on the owner's registration card packed with your tool.

If you need assistance in locating any accessory, please contact: Black & Decker (U.S.) Inc., User Services Department, 10 North Park Drive, P.O. Box 857, Hunt Valley, MD 21030-0857.

CAUTION: The use of any other accessory or attachment other than those recommended in this manual may be hazardous.

NOTES

COMMERCIAL/INDUSTRIAL USE WARRANTY

Black & Decker (U.S.) Inc. warrants this product for one year from date of purchase. We will repair without charge, any defects due to faulty material or workmanship. Please return the complete unit, transportation prepaid, to any Black & Decker Service Center or Authorized Service Station, listed under "Tools Electric" in the yellow pages. This warranty does not apply to accessories or damage caused where repairs have been made or attempted by others.

CAUTION

To assure product SAFETY and RELIABILITY, repairs, maintenance (excluding brush inspection and replacement) and adjustment should be performed by BLACK & DECKER Service Centers or other qualified service organizations, always using BLACK & DECKER replacement parts.

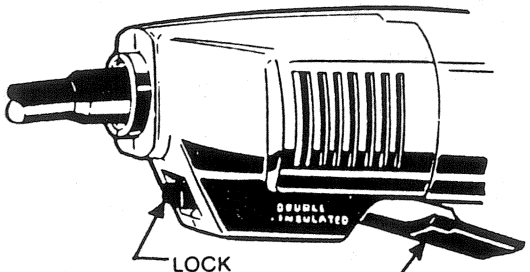


FIG. 1

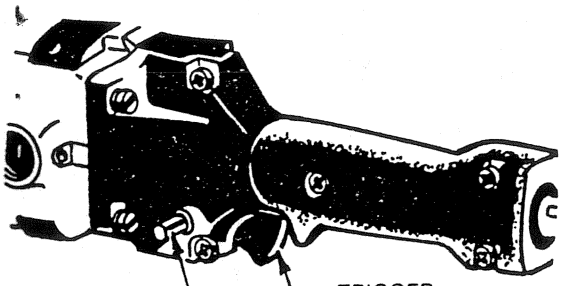


FIG. 2

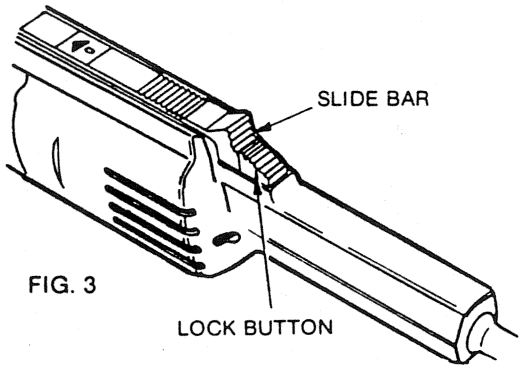


FIG. 3

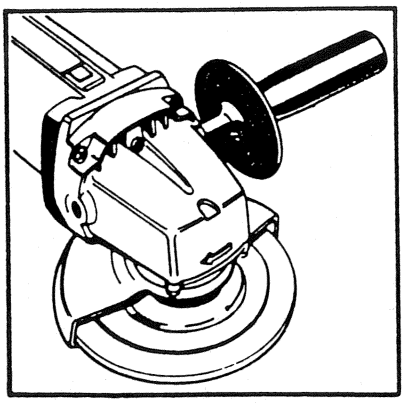


FIG. 4

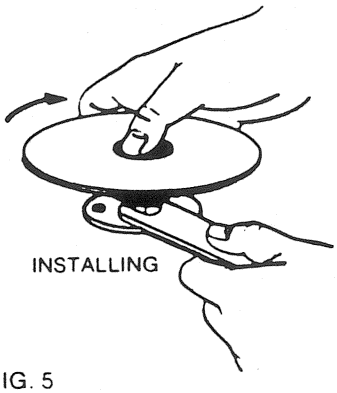


FIG. 5

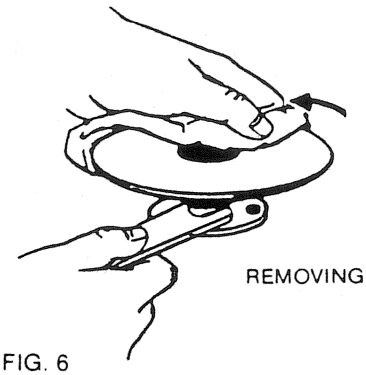


FIG. 6

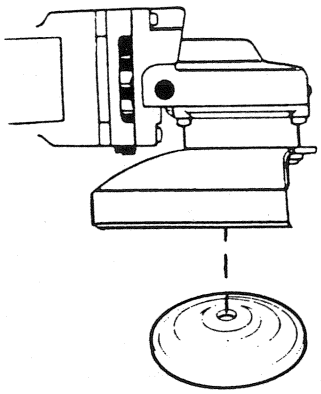


FIG. 7

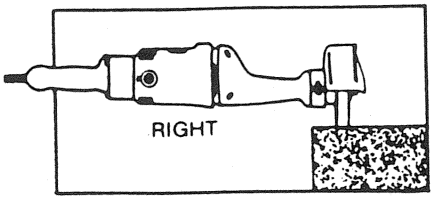
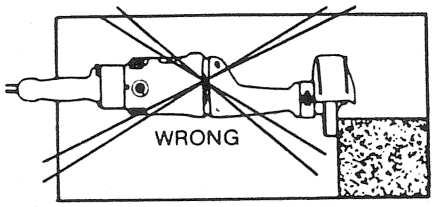


FIG. 8



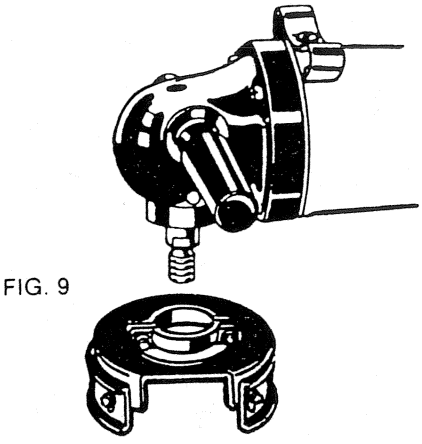


FIG. 9

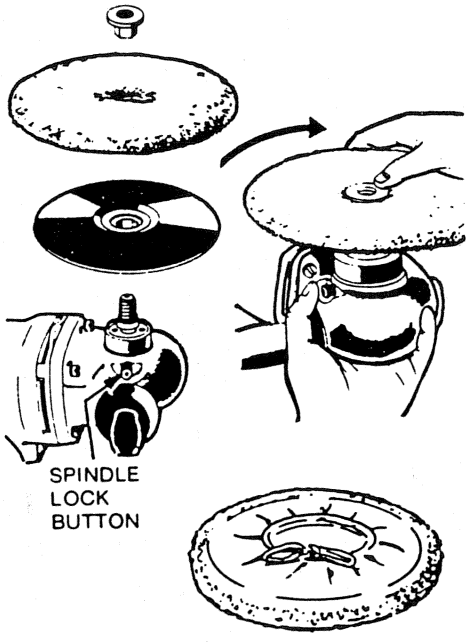


FIG. 10

BLACK & DECKER (U.S.) INC.
U.S. Power Tools Group
10 North Park Drive
P.O. Box 798
Hunt Valley, MD 21030-0798

Form No. 446985

(FEB87-CD)