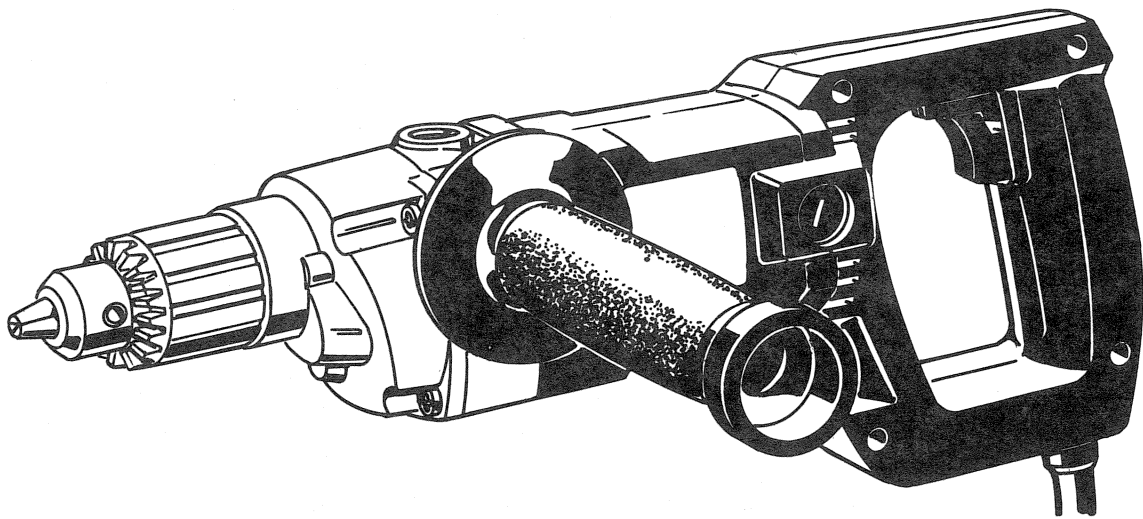




**BLACK & DECKER®**

# End Handle Drills and Right Angle Drills

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Instruction Manual

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**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.
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.

**CAUTION:** When drilling into walls, floors or wherever "live" electrical wires may be encountered, **DO NOT TOUCH THE CHUCK OR ANY FRONT METAL PARTS OF THE DRILL!** Hold the Drill only by the plastic handle to prevent shock if you drill into a "live" wire.

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**Additional  
Drill Safety  
Rules**

Do not tape the chuck key to the cord set. The chuck key handle may, over a period of time, cut through the cord set insulation thereby creating an electrical hazard. Use a plastic or rubber chuck key holder to hang the key from the cord.

**SAVE THESE INSTRUCTIONS**

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**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 letters "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.

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.

## Motor Brushes

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.

## Motor

Your Black & Decker tool is powered by a B&D-built motor. Be sure your power supply agrees with the nameplate marking.

Volts 50/60 Hz or "AC only" means your tool must be operated only with alternating current and never with direct current. Volts DC-60 Hz or AC/DC means your tool may be operated with either alternating or direct current.

Voltage decrease of more than 10% will cause loss of power and overheating. All B&D tools are factory tested; if this tool does not operate, check power supply.

## Switches

### SWITCH OPERATION

A switch locking button (provided on some tools) permits locking the trigger in the full "ON" position for continuous operation. To lock trigger in "ON" position depress trigger and push in locking pin (located next to trigger). To release locking mechanism, depress and release trigger.

Pulling the trigger switch turns the tool "ON"; releasing the trigger switch turns the tool "OFF". These drills also have reversing capability. For controlling the rotational direction of the spindle, there is a lever, integral to and on top of the trigger switch. For drilling (forward position) this lever should be slanted to the left side of the tool (viewing from behind the handle) and for easing drill bits out of tight holes (reverse position) it should be slanted to the right side of the tool. A built-in mechanical interlock prevents changing the direction of the tool with the lever, unless the trigger switch is released, turning the tool "OFF" during the directional change. After any reversing, return lever to forward position.

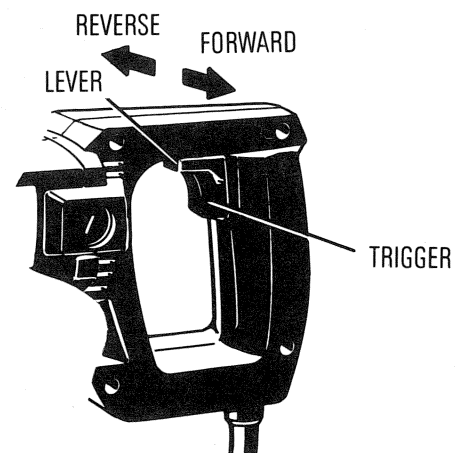


FIG. 1

**Attaching  
Side Handle  
For 900 RPM  
Drills**

Drop the hexagon head bolt into the handle. Several threads will protrude thru the handle. Engage these threads into the threaded hole in the tool and turn clockwise until tight (Fig. 2). During tightening, the hexagonal head of the bolt is seated into a socket within the handle. The Handle/Bolt when assembled properly will remain intact when moving the side handle to the other two locations of the tool.

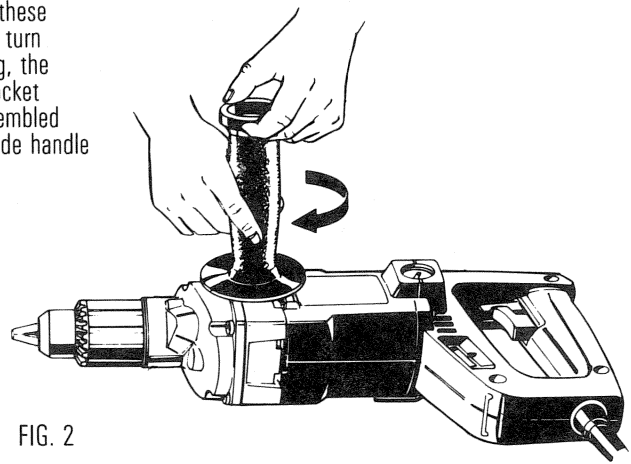
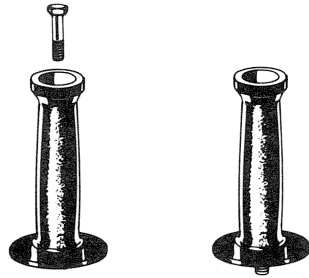


FIG. 2

**Attaching  
Side Handle  
For 475 & 600 RPM  
Drills**

Drop the hexagon head bolt into the handle. Several threads will protrude thru the handle. Engage these threads into the threaded hole in the handle extension and turn clockwise until tight (Fig. 2A). Engage threads of handle extension into the threaded hole in the tool and turn clockwise until tight. During tightening, the hexagonal head of the bolt is seated into a socket within the handle. The handle/bolt when assembled properly will remain intact when moving the side handle to the opposite side of the tool.

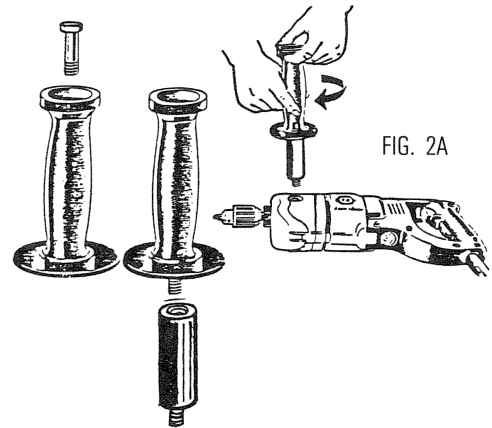


FIG. 2A

**Attaching  
Side Handle  
To Right Angle Head**

This assembly does not require the use of the handle extension. With bolt in handle engage bolt threads into

the threaded hole in right angle head. Turn clockwise until tight.

**Operation**

**CAUTION:** Always unplug the tool when attaching or changing bits or accessories.

1. Open the chuck jaws by turning collar with fingers and insert shank or bit about  $\frac{3}{4}$ " into chuck. Tighten chuck collar by hand. Place chuck key in each of the three holes, and tighten in clockwise direction. It's important to tighten chuck with all three holes. To release bit, turn chuck key counter clockwise in just one hole, then loosen chuck by hand.
2. Use sharp drill bits only. For WOOD, use twist drill bits, spade bits, power auger bits, or hole saws. For METAL, use high-speed steel twist drill bits or hole saws. For MASONRY, such as brick, cement, cinder block, etc., use carbide-tipped bits.
3. Be sure the material to be drilled is anchored or clamped firmly. If drilling thin material, use a wood "back-up" block to prevent damage to the material.
4. Always apply pressure in a straight line with the bit. Use enough pressure to keep drill biting, but do not push hard enough to stall the motor or deflect the bit.
5. Hold drill firmly to control the twisting action of the drill. Use side handle.

**CAUTION:** Drill may stall if overloaded causing a sudden twist. Always expect the stall. Grip the drill firmly to control the twisting action and avoid injury.

6. IF DRILL STALLS, it is usually because it is being overloaded or improperly used. RELEASE TRIGGER IMMEDIATELY, remove drill bit from work, and determine cause of stalling. DO NOT CLICK TRIGGER OFF AND ON IN AN ATTEMPT TO START A STALLED DRILL—THIS CAN DAMAGE THE DRILL.
7. To minimize stalling on breaking through the material, reduce pressure on drill and ease the bit through the last fractional part of the hole.
8. Keep the motor running when pulling the bit back out of a drilled hole. This will help prevent jamming.

**DRILLING IN METAL**

Use a cutting lubricant when drilling metals. The exceptions are cast iron and brass which should be drilled dry. The cutting lubricants that work best are sulphurized cutting oil or lard oil; bacon grease will serve the purpose. Aluminum is best drilled with kerosene.

**DRILLING IN WOOD**

Holes in wood can be made with the same twist drills used for metal. These bits may overheat unless pulled out frequently to clear chips from the flutes. For larger holes, use Power Drill Wood Bits. Work that is apt to splinter should be backed up with a block of wood.

## Geared Chucks

1. Always completely insert the shank of the drill bit or accessory in the chuck. This permits full gripping power and prevents cocking the chuck jaws. When using drill bits or accessories with 3 "flats" on the shank, the chuck jaws should be located on the centers of these flats.
2. Use all three holes in the chuck body to tighten the jaws (Fig. 3). Insert the chuck key into each hole and tighten as much as possible. To release the drill bit, use the chuck key in only one hole.
3. Use only a chuck key to tighten or loosen the chuck jaws.

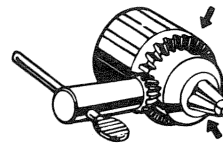


FIG. 3

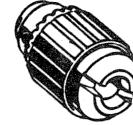


FIG. 5

## Chuck Removal and Attachment

For geared chucks which are tang driven (type of chuck used on  $\frac{1}{2}$ " Right Angle drills, see Fig. 5). Open chuck jaws all the way to gain access to the cap screw inside chuck (see Fig. 6 A). Insert hex wrench and remove cap screw (right hand thread). Pull chuck straight off spindle. Do not try to unscrew chuck.

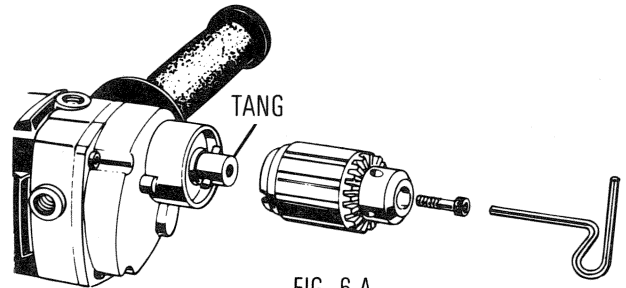


FIG. 6 A

## Right Angle Drill Head

The right angle drills are factory assembled with the right angle head in the low speed position, which is  $\frac{2}{3}$  that of the nameplate speed.

If a higher speed is desired reverse the position of the right angle head and this speed will be 50% faster than the nameplate speed.

## Instructions For Changing Speed With The Right Angle Head

1. To remove chuck open chuck jaws all the way, to gain access to the cap screw inside chuck (Figure 7).
  2. Insert hex wrench and remove cap screw (right hand thread).
  3. Pull chuck straight off spindle. Do not try to unscrew chuck.
  4. Loosen screws on clamp and remove head. CAUTION: Adaptor becomes a loose part at this time.
  5. Select desired speed. If right angle head is not being used, skip steps 6 & 7.
  6. Position clamp over drill gear case.
  7. Insert head into clamp, making sure the slots in the adaptor engage both drive pins. Position the head in the desired direction and tighten both clamp screws.
- IMPORTANT: Tighten both clamp screws alternately at least 4 times each to a torque of approximately 100 in./lbs. to insure proper clamping force.**
8. Place chuck on spindle. Engage drive pin in slots of chuck. Insert cap screw into chuck and screw tightly to spindle.

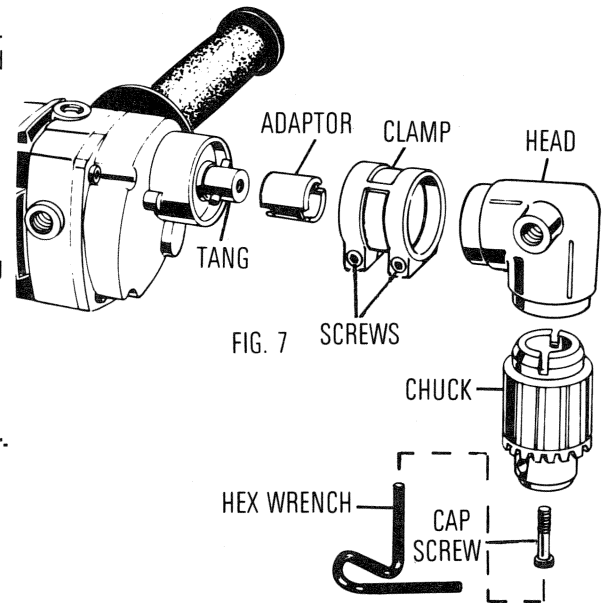


FIG. 7

## Chuck Key Holder

1. Push double-hole end of Holder through slot in other end of Holder (Figure 8).
2. Slip loop over electric plug and draw loop tight around cord (Figure 9).
3. Push ends of Chuck Key Handle through two holes in end of Holder (Figure 10).

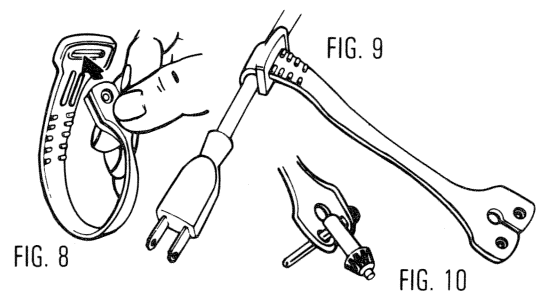


FIG. 8

FIG. 10

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**Accessories**

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.

Recommended accessories for your tool are shown in this manual (CAUTION: The use of any other accessory might be hazardous). For safety in use, the following accessories should be used only in sizes up to the maximums shown in the table below.

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**Cleaning**

With the tool motor running, blow dirt and dust out of all air vents with dry air at least once a week.

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**Lubrication**

Your tool was properly lubricated before leaving the factory. In from two to six months, depending upon use, take or send your tool to Black & Decker Service Center, or Authorized Service Station, for a complete cleaning, inspection and relubrication.

Tools used constantly on production or heavy duty jobs or exposed to heat may require more frequent lubrication. Tools "out of service" for long periods should be relubricated before being put back into service.

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**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.

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**Important**

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

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**Notes**

**BLACK & DECKER (U.S.) INC.**  
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