ACCESSORIES

The following accessories are recommended for use with your Magnetic Drill Press. CAUTION: The use of any other accessory might be hazardous.

1. No. 39031 Hydra-Power Hand-Feed Pump for No. 1554 Magnetic Press only.
2. No. 10601 ¾" Chuck with No. 3 Morse Taper Arbor for No. 1554 Magnetic Press only.
3. Nos. 38790 and 38792 Morse Taper Sockets.
4. No. 39349 Drill Press Caddy.
5. Mandrels and Hole Saws up to 4" diameter.

	1551 Mag. Press	1554 Mag. Press
6. Twist Drill Bits	¼" to 13/16"	½" to 1¼" *
7. Taps	¼" to 13/16"	½" to 1" *
8. Reamers, light gauge	¼" to ⅝"	½" to 1" *
Reamers, heavy gauge	¼" to ½"	½" to ¾" *

* ¼" to ¾" with No. 10601 Chuck. For drilling smaller holes, a 3-2 or 3-1 Reducing Sleeve (not supplied by B&D) or a B&D No. 10601 Chuck mounted on a No. 3 Morse Taper Arbor can be used.

GUARANTEE

Black & Decker guarantees, for one year from date of purchase, to correct by repair or parts replacement without charge any defect due to faulty material or workmanship. Simply return the complete unit, transportation prepaid, to any Black & Decker Service Center or Authorized Service Station. Naturally, we assume no responsibility for damage caused by misuse, careless handling or where repairs have been made or attempted by others. No other guarantee, written or verbal, is authorized by us.

IMPORTANT!

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

See "Tools-Electric" —Yellow Pages— for Service & Sales

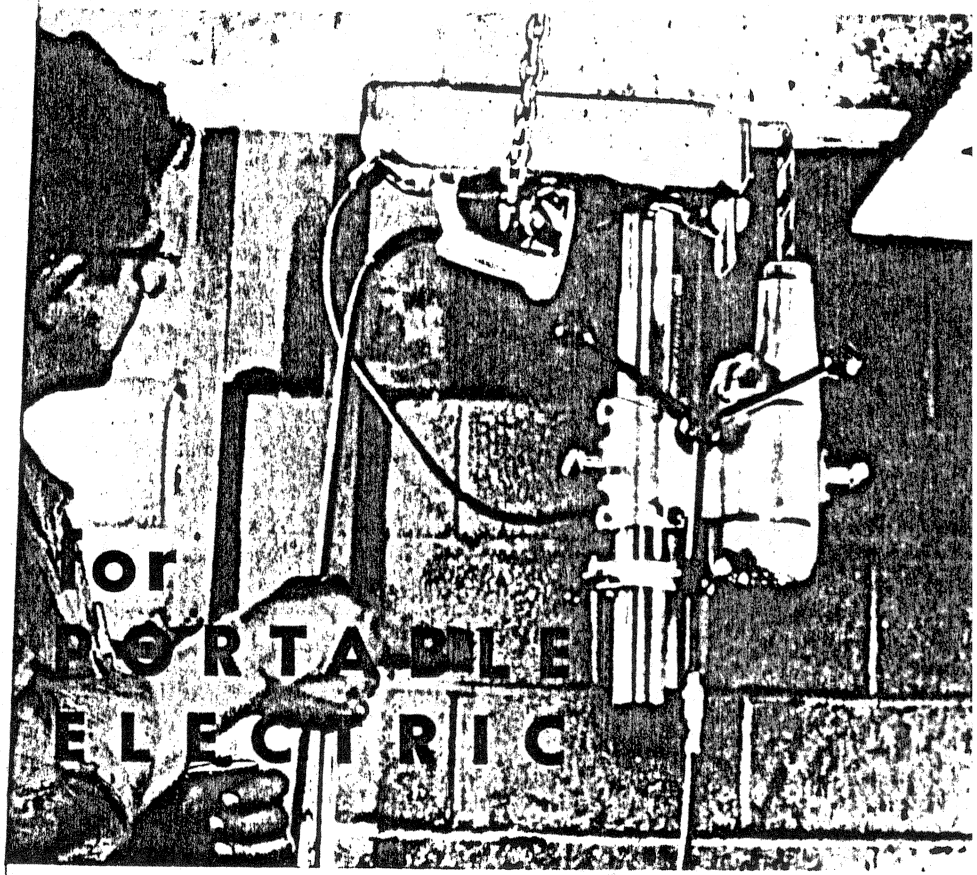
THE BLACK & DECKER MFG. CO. — TOWSON, MARYLAND 21204, U. S. A.

Form No. 89330 (APR75-CD) Printed in U.S.A.

Black & Decker®

1554

OWNER'S MANUAL



MAGNETIC DRILL PRESSES

SAFETY RULES FOR POWER TOOLS

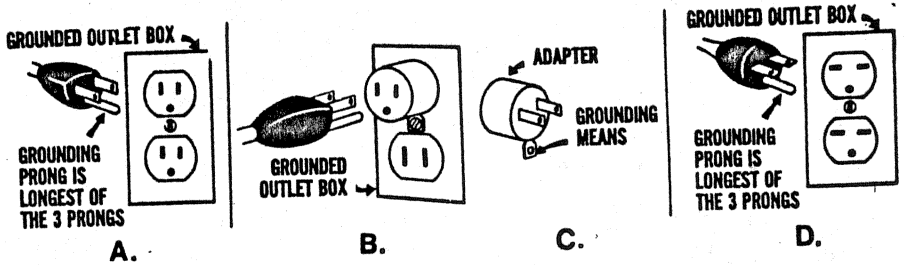
1. **KNOW YOUR POWER TOOL**—Read owner's manual carefully. Learn its applications and limitations as well as the specific potential hazards peculiar to this tool.
2. **GROUND ALL TOOLS—UNLESS DOUBLE-INSULATED.** If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If adapter is used to accommodate two-prong receptacle, the adapter wire must be attached to a known ground. Never remove third prong.
3. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
4. **AVOID DANGEROUS ENVIRONMENT.** Don't expose power tools to rain. Don't use power tool in damp or wet locations. And keep work area well lit.
5. **KEEP CHILDREN AWAY.** All visitors should be kept safe distance from work area.
6. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, high or locked-up place—out of reach of children.
7. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
8. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy duty tool.
9. **WEAR PROPER APPAREL.** No loose clothing or jewelry to get caught in moving parts. Rubber gloves and footwear are recommended when working outdoors.
10. **USE SAFETY GLASSES** with most tools. Also face or dust mask if cutting operation is dusty.
11. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.
12. **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.
13. **DON'T OVERREACH.** Keep proper footing and balance at all times.
14. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp at all times, and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
15. **DISCONNECT TOOLS.** When not in use, before servicing; when changing accessories such as blades, bits, cutters, etc.
16. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
17. **AVOID ACCIDENTAL STARTING.** Don't carry plugged-in tool with finger on switch. Be sure switch is "OFF" when plugging in.
18. **OUTDOOR USE EXTENSION CORDS**—When tool is used outdoors, use only extension cords suitable for use outdoors and so marked.
19. **DO NOT OPERATE** portable electric tools in gaseous or explosive atmospheres. Motors in these tools normally spark, and the sparks might ignite fumes.

SAFETY RULES FOR MAGNETIC DRILL PRESSES

1. Always be sure that the drill press is plugged into the correct voltage system. Place cord so that it cannot be pulled from the receptacle accidentally. Check for correct line fuse.
2. Before operating unit, make sure it is grounded correctly in accordance with instructions under "Grounding."
3. Always use safety chain when working on vertical beams or overhead since electrical supply may fail or unit may accidentally be disconnected. Connect safety chain immediately after magnet unit is set in place.
4. Always use the correct gage extension wire (see Extension Wire Table).
5. Use a back-up plate when magnet is mounted on thin material, the total thickness should be ½" or more. See instructions under "Operation."
6. Use "Hydra-Power" Feed assembly whenever possible, remove pump from column whenever working overhead or in restricted areas.
7. Care should be taken to place the base on a flat surface. Do not set magnet on objects such as bolt heads, screws, rivets, or steel chips, since space between magnet and working surface weakens the magnet pull.

GROUNDING & EXTENSION CORD

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.



We recommend that you NEVER disassemble the tool or try to do any rewiring in the electrical system. Any such repairs should be performed only by B&D Service Centers or other qualified service organizations. Should you be determined to make a repair yourself, remember that the green colored wire is the "grounding" wire. Never connect this green wire to a "live" terminal. If you replace the plug on the power cord, be sure to connect the green wire only to the grounding (longest) prong on a 3-prong plug.

A 3-conductor, grounding-type extension cord of adequate size must be used for safety, and to prevent loss of power and over-heating. Use the table below to determine minimum wire size required.

Use only three wire extension cords which have three-prong grounding-type plugs and three-pole receptacles which accept the tool's plug. Replace or repair damaged cords.

Ampere rating (on nameplate)	0 to 2.0	2.10 to 3.4	3.5 to 5.0	5.10 to 7.0	7.10 to 12.0	12.1 to 16.0
Ext. Cable length	Wire Size (A.W.G.)					
25 ft.	18	18	18	18	16	14
50 ft.	18	18	18	16	14	12
75 ft.	18	18	16	14	12	10
100 ft.	18	16	14	12	10	—
150 ft.	16	14	12	12	—	—
200 ft.	16	14	12	10	—	—

BRUSHES

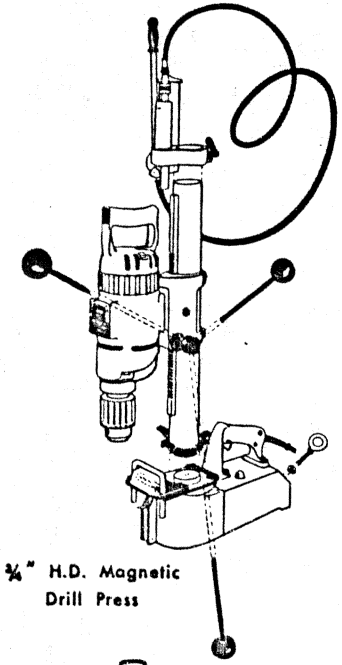
Carbon Brushes should be regularly inspected for wear if your tool has exterior Brush Inspection Caps. When the cap is unscrewed, the spring and brush assembly may be withdrawn from the tool.

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 back page of this manual.

If your tool does not have exterior Inspection Caps, brush inspection should only be attempted by trained power tool repairmen like the men at B&D Service Centers. The inspection should be made every two to six months, depending upon usage.

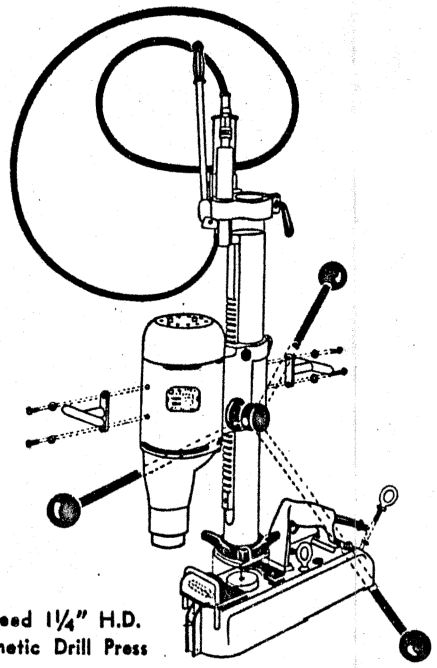
ASSEMBLY

The Heavy-Duty Magnetic Drill Press is shipped with knobs, handles, etc. disassembled. A "Hydra-Power Feed", also illustrated, may also be purchased separately for either unit . . . Cat. #39328 (for ¾" Mag. Press); Cat. #39031 (for 1¼" Mag. Press). Assembly of these parts, see Fig. 4.

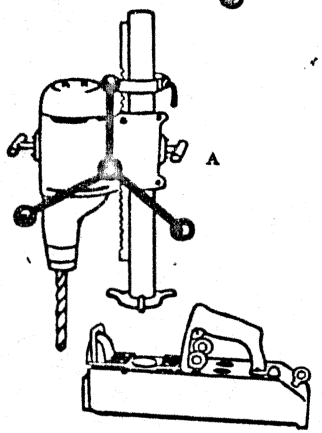


¾" H.D. Magnetic Drill Press

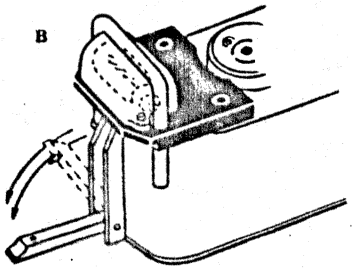
Fig. 4



2-Speed 1¼" H.D. Magnetic Drill Press



A



B

FEATURES

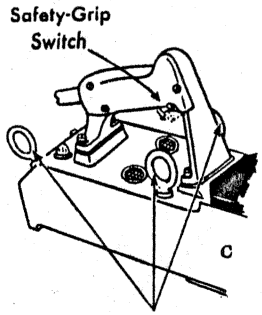
TWO SPEEDS FOR 1¼" MODEL—250 or 500 RPM. Makes possible a practical drilling speed for drilling holes 1¼" down to ⅝" with the included No. 3 Morse Taper Socket. When pilot holes are drilled for large drill bits, both can be done with this drill, with the correct speed for both.

TWO PIECE CONSTRUCTION (A)—This eliminates the difficulty in locating the unit on the work—allows accuracy with a minimum of exertion.

RUGGEDIZED HEADLIGHT (B)—Located to direct beam of light at the center of the hole to be drilled. Complete illumination of the work area. Magnet light is located towards rear of base, this light will glow when magnet is turned on.

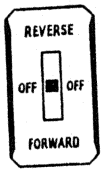
PRECISION DRILL POINT LOCATOR (B)—Exclusive feature with Black & Decker units Provides accuracy of location not found on any competitive unit. More accurate than locating from a drill bit point.

FEATURES (Cont.)

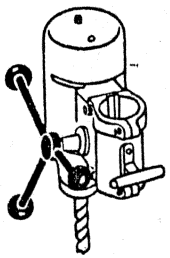


C

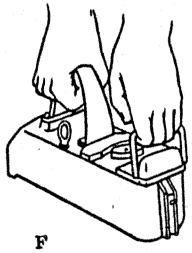
Eye-bolts



D



E



F

SAFETY GRIP SWITCH (C)—Safety grip switch in switch handle for magnet control. When operator releases trigger, the magnet is in the "ON" position. A locking pin is provided to keep the switch in the "OFF" position when required.

CONVENIENTLY LOCATED EYE BOLTS FOR SAFETY CHAIN (C)—A safety chain is furnished as standard equipment together with several conveniently located eye bolts and handles for securing chain. This safety chain should always be used when drilling overhead or vertically, since there is always a danger of power line failure, plugs being pulled out, or other electrical failures.

EXCLUSIVE TIME-DELAY REVERSING SWITCH (D)—This switch features a time delay which cautions the user against reversing the drill while the motor is still in motion (See item 7—operation). Rapid reversing causes a high ampere surge in the line with subsequent electrical failure.

CONTINUOUS DUTY OPERATION—Designed for continuous duty operation.

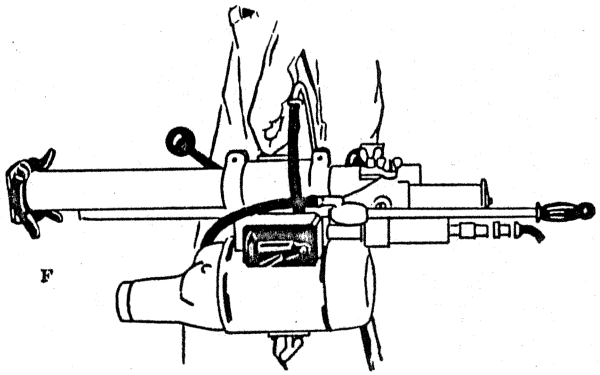
ONE PIECE CONSTRUCTION OF DRILL AND COLUMN MOUNTING (E)—This type of construction will maintain accuracy even under extremely rough uses. The Drill unit cannot work loose. Gibs along side of the rack can be adjusted for wear or side play.

EXTRA VERTICAL TRAVEL—Extra vertical travel on the column allows sufficient movement so that full length twist drill can be mounted in the drill spindle.

SUPERIOR MAGNET POWER—Magnets have considerable extra power under all conditions of operation. They develop maximum drill point pressure on ½" thick flat steel plate, magnet in horizontal position with full metal contact. Thick steel is unnecessary.

FOR WELDING APPLICATIONS—The magnet of this unit may be used for holding plates in preparation for welding. Avoid weld splatter and heat close to magnet.

EASE OF HANDLING (F)—Dual handles on both parts of the unit allow easy and safe handling. A Drill Press "Caddy" (fits both ¾" and 1¼" units) is available (Cat. No. 39349) for ease in transporting unit from job to job. See Fig. 5.



F

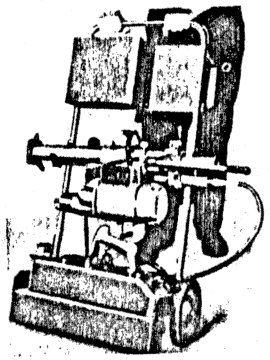
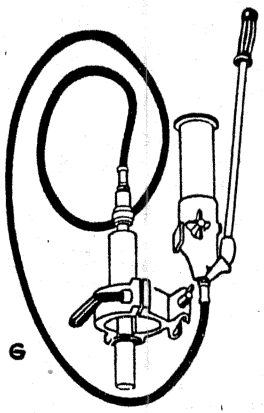


Fig. 5

FEATURES (Cont.)



EXCLUSIVE REMOTE CONTROL "HYDRA-POWER" FEED (optional accessory) (G)—The power feed is fitted with a release valve to control the amount of pressure to the drill point. The control hose on the hydraulic feed has sufficient length so that the operator can stand away from the unit during the drilling operation. This is particularly valuable on overhead and side wall drilling.

HIGH TORQUE POWER UNIT—The motor unit is Black & Decker built to provide extra power for all drilling operations with a normal drilling capacity of ¾" or 1¼" in steel on the ¾" or 1¼" units, respectively.

OPERATION

The B&D Magnetic Drill Presses are capable of heavy-duty CONTINUOUS operation.

1. Positive Grip Magnet Switch which, when depressed, magnet is off; when switch is released, magnet is on.
2. When magnet unit is plugged in, the headlight should be on. When magnet is on, the magnet light should glow.
3. After checking switches and lights, locate and mark point at which hole is to be drilled. Place the magnet on the work so that the drill point locator is directly over the spot to be drilled. Magnet base may be held by gripping handle on back with finger on magnet switch and the left hand on front sliding handle Fig. 6. When drill point is located, release hand from magnet switch and magnet will hold on work instantaneously. When drilling in an overhead or vertical position, the safety chain should be employed. See Fig. 7 for two suggested positions.

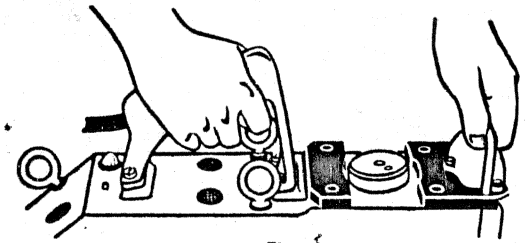


Fig. 6

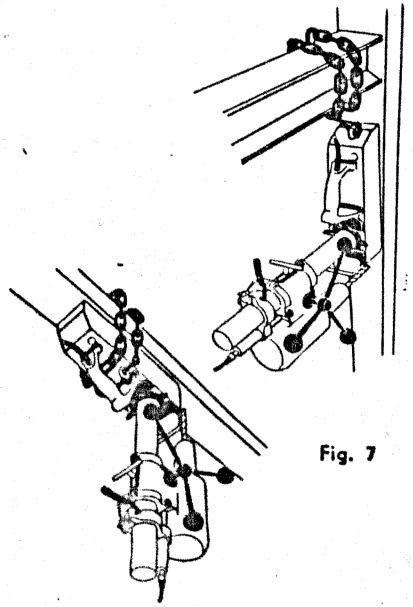


Fig. 7

4. The magnet in this unit is designed for use on ½" thick steel—with zero air gap. It may be used on rough or uneven surfaces, painted surfaces, thinner steel or surfaces of sufficient mounting area for the magnet base with drill point pressure as shown on charts on pages 9 and 10. Air gap may be defined as the distance between the magnet core surface and the mounting plate. The two surfaces may be kept apart by curvature, by extra heavy coats of paint, by surface irregularities, bolt heads etc. The magnet rapidly loses its holding power when this surface irregularity raises the air gap to a point above 1/64". Keep this air gap to a minimum and be sure to smooth the surface removing any undue projections, chips or other items that will not allow full metal to metal contact. If the magnet fails to hold on a metal surface, it may be due to this condition and a check can be made with a feeler gauge or similar material in order to determine if an air gap exists under the magnet at the crucial points indicated above.

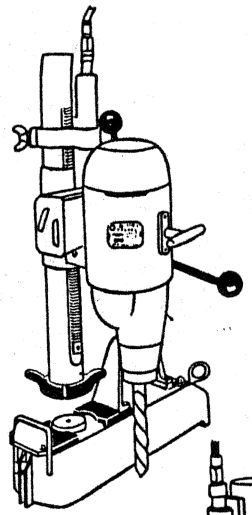


Fig. 8

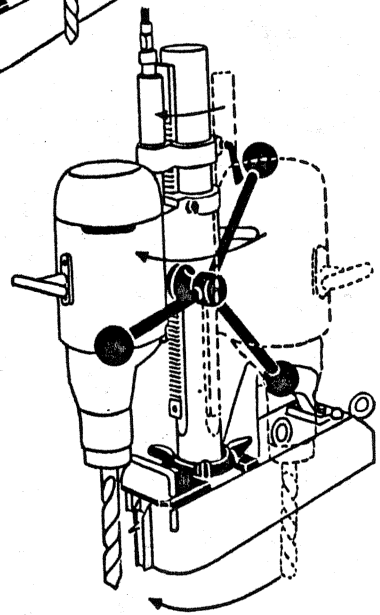


Fig. 9

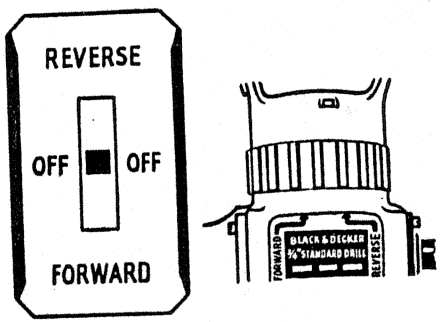


Fig. 11

5. The drill and column assembly should now be inserted into place. This is done by placing lower end of column over column locating boss Fig. 8. *Note:* The drill motor must be in a 90° counter-clockwise position from the point locator. The drill unit is then turned 90° clockwise. Stops are provided in the base which position the drill accurately in line with the drill point locator Fig. 9. It is important that the drill unit be turned until it hits these stops—tighten wing nut securely with column in this position Fig. 10.

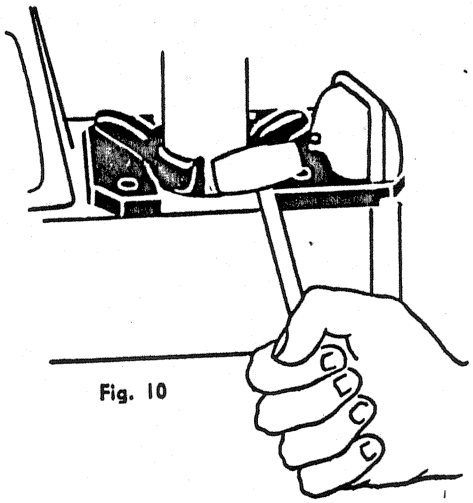


Fig. 10

It is recommend that this nut be tapped tight with a soft hammer, using a rapid series of light blows. When dismantling this unit, the reverse of the aforementioned procedure should be employed.

6. Plug drill cord into rear of magnet. After securing correct size bit, unit is ready for drilling.
7. Drill motor may be operated in either clockwise or counterclockwise motion. See Fig. 11 for forward and reverse switch position. Note: Do not use reversing switch until motor has stopped.
8. The narrow width of the base allows working in I beams. The drill column can be swung 17° counterclockwise, and wing nut securely tightened, for drilling close to the I beam flange, or in close to a wall Fig. 12. Note: Drill point locator cannot be used in this position.
9. The drill bit pressure may be applied manually by use of the spider arm Fig. 13, or automatically by using the "Hydra-Power" Feed Fig. 14. By using the "Hydra-Power" Feed, an ideal drill point pressure is obtained.

OPERATION (Cont.)

When drilling overhead or in restricted areas, the pump from the "Hydra-Power" Feed must be removed and operated away from the unit. Always use pump in an upright position.

10. The "Hydra-Power" Feed assembly consists of the ram mounted to the column bracket, the connecting base hose and the pump with operating handle Fig. 15. Bracket G slides down over the top of the drill press column. Bracket has clamping handle A, also a clamping wing nut B holds the pump assembly in place. The ram assembly C is screwed into the column mounting.

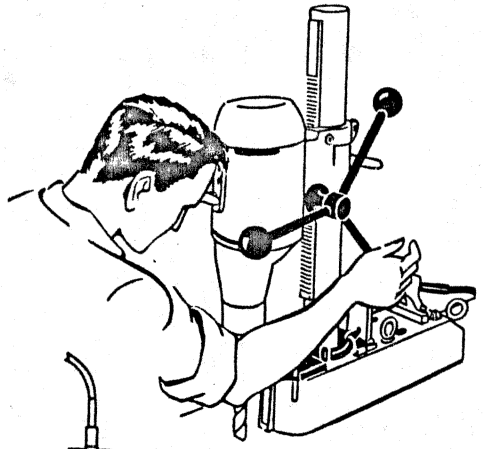


Fig. 13

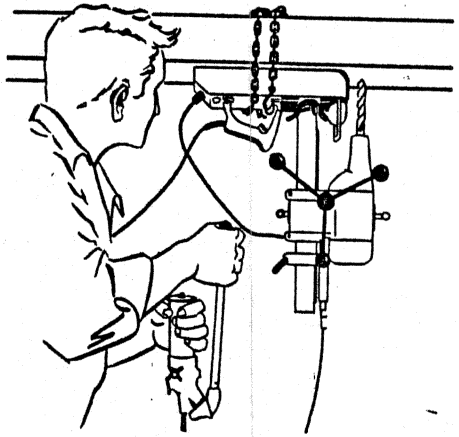


Fig. 14

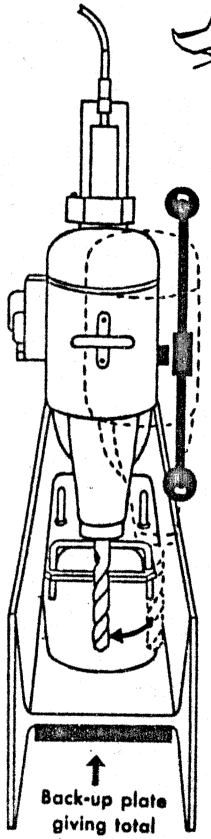


Fig. 12

The pump has a control valve D (Fig. 15) which is turned to the right when it is in pumping position and has to be turned to the left in order to release the ram when the drilling operation is completed. The pump must be held in a vertical position, that is, with the handle F and body held veritcal so that fluid will flow through the tube. E. The pump is fitted with an internal release valve which utilizes the large capacity of this unit without overloading. Instructions for filling the hydraulic pump are listed under "Adjustments." Move the drill unit down the column so that the bit is positioned just above the work. Then, loosen handle A and slide the ram down the column so that it contacts the surface of the casting behind the drill unit. The ram should be in its uppermost position which is obtained by turning valve D counterclockwise and pushing the ram up into the piston. Then, tighten lever A and make sure that valve D is tightened in a clockwise direction. Pumping action by means of the lever will then force the drill bit down to a maximum distance of 3 inches. When the drilled hole is complete, release valve D by turning counterclockwise. Loosen lever A and raise the drill unit back out of the hole by means of the hand levers furnished on the unit. This will complete the drilling operation.

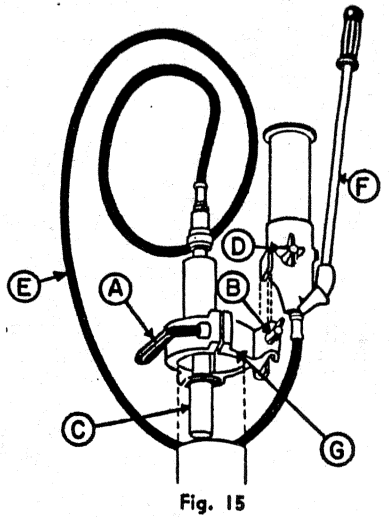


Fig. 15

For best results the magnetic base should be placed on a flat surface as shown in Fig. A. The magnet core and the back lip of the casting must be in full contact in order to maintain maximum drill point pressure. The magnet has less drill point pressure if surface "S" is low as shown in Fig. B. To prevent the front of the magnet core from tipping or raising up, use the adjustable screw at the rear of the magnet base to make contact with surface "S" (see Fig. B). If the surface "S" is high (Fig. C), or is rough and uneven (Fig. D), it may keep magnet core from making full contact with the mounting surface, thereby reducing drill point pressure. The mounting surface must be rigid as the magnet will rise up from a non-rigid surface due to the bending of this surface as drill point pressure is applied.

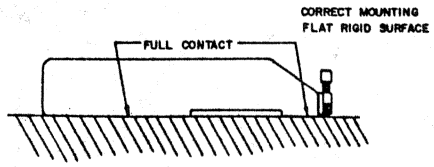


FIG. A

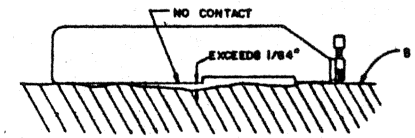


FIG. C

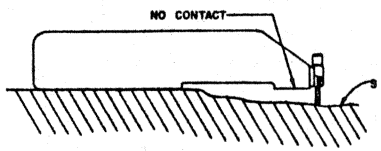


FIG. B

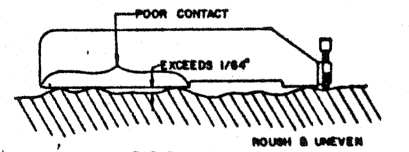


FIG. D

DRILL POINT PRESSURE

½" Thick Cold Rolled Steel—Magnet Horizontal—Flat Surface

	Zero-Airgap	Airgap 1/64"	Airgap 1/32"
1¼" H.D. Magnet Drill Press	1850 lbs.	1325 lbs.	1050 lbs.
¾" H.D. Magnetic Drill Press	1150 lbs.	800 lbs.	575 lbs.

Variation with Metal Thickness & Back up Plate

Plate Thickness	Back-Up Plate Thickness	% Of Maximum Drill Point Pressure
¼"	None	48.5
¼"	¼"	82
¼"	⅜"	86
¼"	½"	86
5/16"	None	54
5/16"	¼"	82
5/16"	⅜"	82
1"	None	105
¼"	¼"	16 — Back-up plate on same side as magnet (Note—Do not use this

OPERATION (Cont.)

½" THICK COLD ROLLED STEEL—FLAT SURFACE
ZERO AIRGAP

Position	Percent of Maximum Drill Point Pressure
Horizontal	100
Overhead	94
Vertical with Drill on top	90
Vertical with Drill on bottom	93
Vertical with Drill on side	92
No contact at backlip (See Figure B)	54

NOTE—Surface conditions will alter these readings. They can be used for comparison purposes, but cannot always be duplicated. The Hydra-power feed has a pressure release valve, built in, which limits pressure to 1200 lbs. maximum on the 1¼" Magnetic Drill Press and 750 lbs. on the ¾" Magnetic Drill Press.

CONTROL

Apply sufficient pressure to get good drilling. Do not force unit. If magnet starts to lift from work plate, decrease pressure slightly and it will reclamp. Drill point pressure when using the hydra-power feed may exceed holding power under one or more of the following conditions:

1. Excessive air gap—1/64" or more
2. Thin metal (under ½" even with back up plate depending upon position and condition of metal surface.)
3. Metal with low magnetic properties.
4. Uneven or rough surface.
5. Low line voltage.
6. Defect in hydra-power feed release valve.
7. Defective unit.

HOW TO DRILL & TAP

For accuracy drill a small lead hole before using the final size twist drill. Large dia. drills will "walk" off center until drill reaches full dia. at which point the outside dia. acts as a pilot in the hole being drilled. This is not peculiar to magnetic drill presses, but is general machine shop knowledge on any large hole drilling.

MOTOR

Your tool is powered by a Black & Decker built motor. Be sure your power supply agrees with nameplate marking. Volts 50/60 Hz means Alternating Current ONLY. VOLTS DC60-Hz means it will also operate on Direct Current. Voltage variation of more than 10% will cause loss of power and over-heating. All B&D tools are factory-tested; if this tool does not operate, check the following: Supply line for blown fuses; plug and receptacle for contact.

ADJUSTMENTS

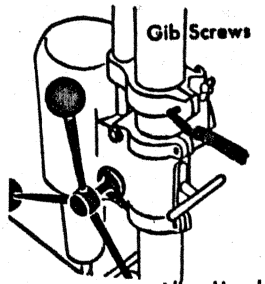


Fig. 16

1. To adjust for play caused by wear on rack, set gib screws Fig. 16.
2. Tighten column housing by adjusting Allen head screws Fig. 16.
3. To balance weight of motor, the friction clutch should be adjusted Fig. 17.
4. To refill "Hydra-Power" hydraulic reservoir, collapse ram if connected to pump, permitting oil to flow back into pump. Remove filler plug at end of pump Fig. 18. Add B&D hydraulic oil (Cat. No. 39466) until it is level with notch on stem of filler plug, using stem as a dipstick. Do not add too much oil; pump must have enough air space to function properly.
IMPORTANT! For the protection of your "Hydra-Power" use only B&D hydraulic oil. Brake fluid, alcohol, glycerine, castor oil damages cups and packings and corrodes metal. When refilling pump with oil occasionally drain pump completely and flush it out with kerosene.

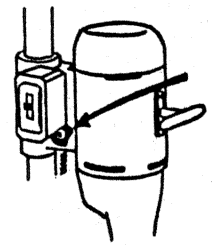


Fig. 17

It is possible that air might get into the system hindering its proper operation. To remove air, close release valve and pump until ram plunger is fully extended. Now, open release valve and place plunger end of ram on floor and slowly push down until it is fully collapsed. Then pump rapidly 8 to 12 strokes. Repeat procedure if necessary.

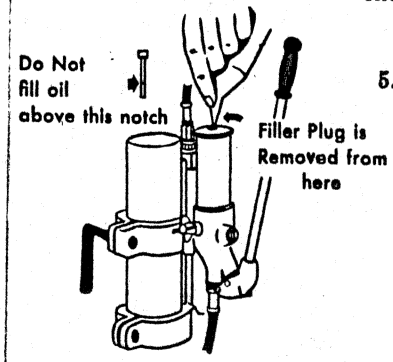


Fig. 18

5. The bearings used in Drill unit are of the closed type and therefore do not need further lubrication. When replacing grease in gear case, always wash out old grease with a good grease solvent before refilling with fresh lubricant. Never fill gear case more than half-full; too much grease is as bad as too little. Grease expands when warm, and excess will be forced through the bearings into the motor, damaging the windings and clogging the ventilating holes. Lubrication is necessary from time to time, on the drill column and ram of the "Hydra-Power" Feed for easy operation and to prevent rusting.

BLACK & DECKER (U.S.) INC.
TOWSON, MARYLAND 21204

Printed in U.S.A.

Black & Decker

OWNER'S MANUAL

MODEL NO. JSO-1500

Jack Rabbit Pump

MULTI-PURPOSE FLUID TRANSFER PUMP KIT

GENERAL USE

A. Handle Assembly — Insert handle into either right or left side depending on which hand you use. Insert button cap from opposite side and fasten with screw. (See Figure 1).

B. Use

1. Attach heavier wall black tubing to bottom fitting marked "In." The heavier wall prevents kinking.
2. Attach other clear hose to discharge fitting marked "Out."
3. Turn crank away from you to pump. It is self-priming and will void itself of air with a few turns.
4. Pump may be used as a siphon where the liquid levels permit. Put inlet hose into the higher level liquid, pump to clear lines of air, then turn handle back one (1) turn to allow clear passage of liquid through discharge tubing to lower level. Pump may be set down if desired.
5. Pump can be used for water, gasoline, hot oil, and many other liquids. Do not use chemicals that would corrode neoprene rubber, such as Chlorinated Hydrocarbons, Hydrochloric acid, or Creosote.
6. Pump will be difficult to operate and should not be used for extended periods at temperatures below 32°F / 0°C. If you anticipate using it under cold conditions, it is advisable to store pump in a warm place, such as under car seat or in the house. If the pump itself is warm, it will pump cold liquids, e.g. gasoline at freezing temperatures, for a short period of time.
7. DANGER — Do not pump flammable fluids in proximity to open flames or hot coals or in areas that are not well ventilated. DO NOT SMOKE.

   NOTE: The gas tanks of many newer cars are fitted with anti-siphoning devices which may not permit siphoning or may damage the pump tubing.

C. Storage

1. Turn pump handle a few times to make sure that liquid (especially gasoline) is clear from pump and hose. CAUTION: Gasoline left in pump may retain dangerous fumes or possibly damage tubing over a period of time.
2. For best longevity of pump, pump should be cleaned periodically by pumping hot water and detergent through it.

USE WITH OIL CHANGE ATTACHMENTS

A. CHANGING OIL

1. Start your engine and allow it to warm up to normal operating temperature. Oil can be pumped effectively only if oil is *hot*. Be sure to shut engine off before pumping.
2. Secure the clear vinyl tubing to the upper fitting on the pump marked "OUT." As the tubing may loosen when hot, a hose clamp is provided to hold it (use pliers).
3. Determine that the dip tube will fit into the dip stick receptacle on your engine.
4. See Figure 1 and assemble hoses and dip tube as follows: The black rubber ring supplied on the dip tube will be used as a marker. The dip tube with 1" rubber coupling should then be inserted in one end of the 5 ft. black hose. Slip the other end of the 5 ft. black hose over the lower intake fitting on the pump. Wetting the hoses will make them slide on easier.
5. Once the engine oil is sufficiently warm, pull the dip stick and insert the dip tube until you feel the bottom of the oil pan.
6. Put the discharge line into a large container such as an old windshield solution bottle. You are now ready to begin pumping.
7. When it appears that all oil has been extracted, try sliding dip tube further into opening and resume pumping again. When oil has been removed, you will notice air is being pumped into container.

B. STORAGE

To prevent oil or other liquids from dripping after use, connect one of the tubing ends to the opposite fitting, thus creating a continuous circuit. For best longevity, pump should be cleaned periodically by pumping hot water and detergent through it.

C. TROUBLE-SHOOTING

Cannot determine bottom of oil pan — If such is the case, line up the tube with your dip stick. Slide the black ring to a point about 2" longer than the dip stick. Push the tube in to about that point. With a little experimenting you can determine what the best point is and can accordingly mark it for future use.

Dip tube gets caught on way down — Pull tube back slightly and twist. Carefully push in again so as not to kink tube.

D. DISPOSAL OF OLD OIL

Protect the environment. Contact your Dept. of Public Works for proper disposal or the Environmental Protection Agency for information on recycling centers in your location.

CAUTION! IMPORTANT!

AFTER EACH USE, BE SURE TO CRANK THE HANDLE BACK A TURN OR MORE TO RELIEVE ROLLER PRESSURE. IF NOT, THE ROLLERS MAY PUT A PERMANENT KINK IN THE INNER PUMPING TUBE.

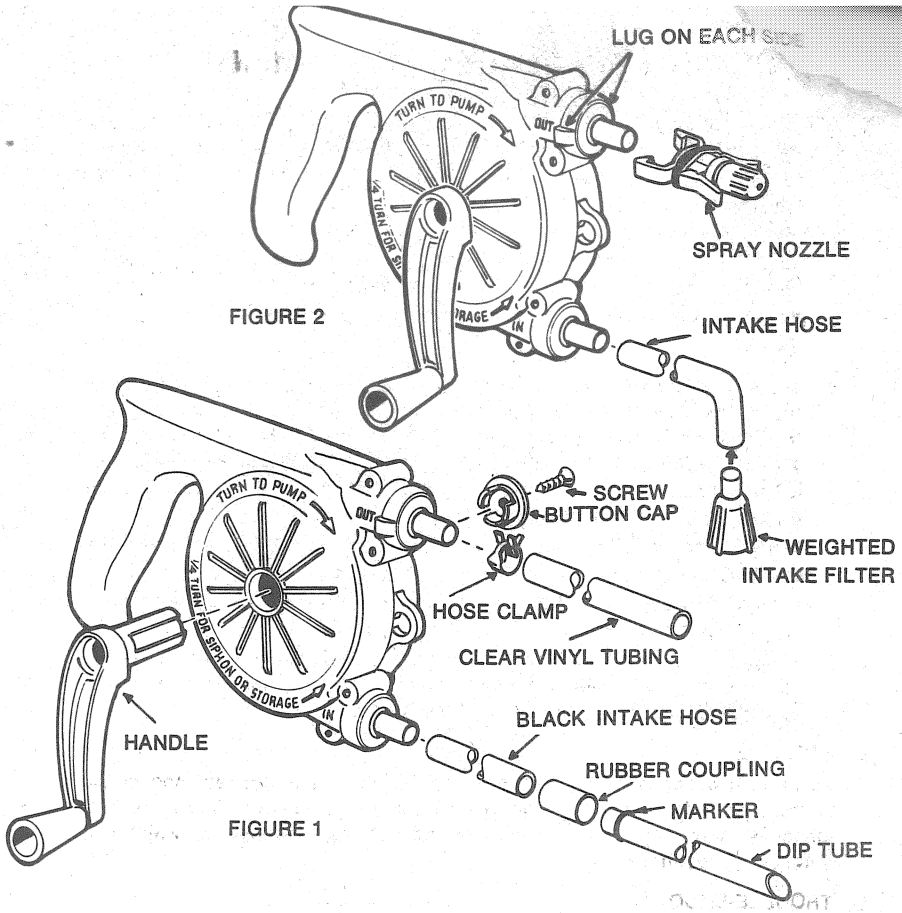


FIGURE 2

FIGURE 1

USE WITH SPRAYER ATTACHMENTS

See Figure 2

A. SPRAYER NOZZLE

1. Wet black "O" ring inside of nozzle to provide for best seal on pump fitting.
2. Squeezing prongs on nozzle, push over upper "Out" fitting of pump and make sure sprayer latches securely on lugs.
3. Adjust for spray desired by turning nozzle head. Tightening creates a fine spray, whereas loosening allows for a jet stream type spray.

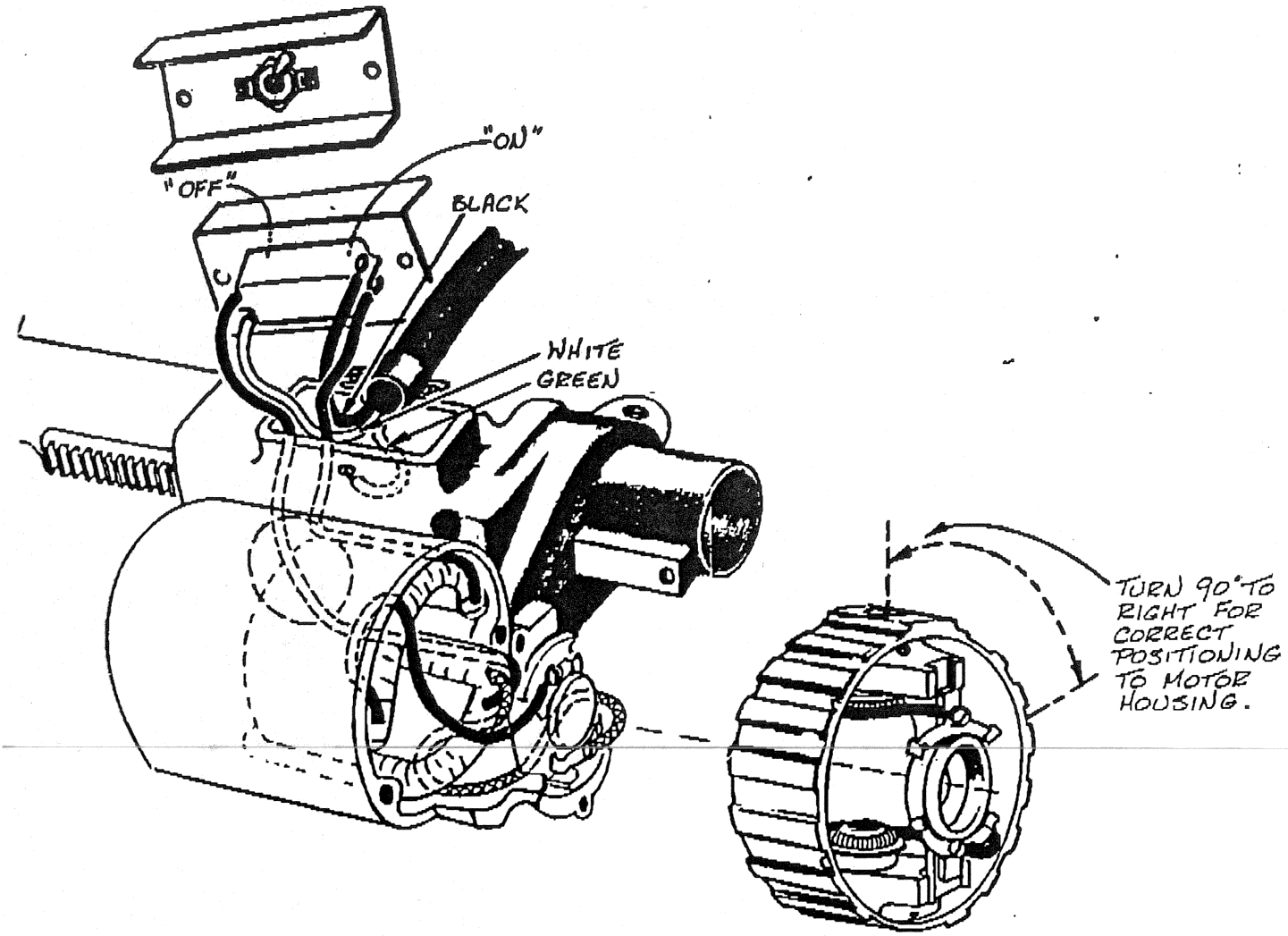
B. INTAKE WEIGHT FILTER

1. Attach filter to intake hose and put in pail of solution to be sprayed. Attach other end of intake hose to bottom "In" fitting on pump.

WARNING

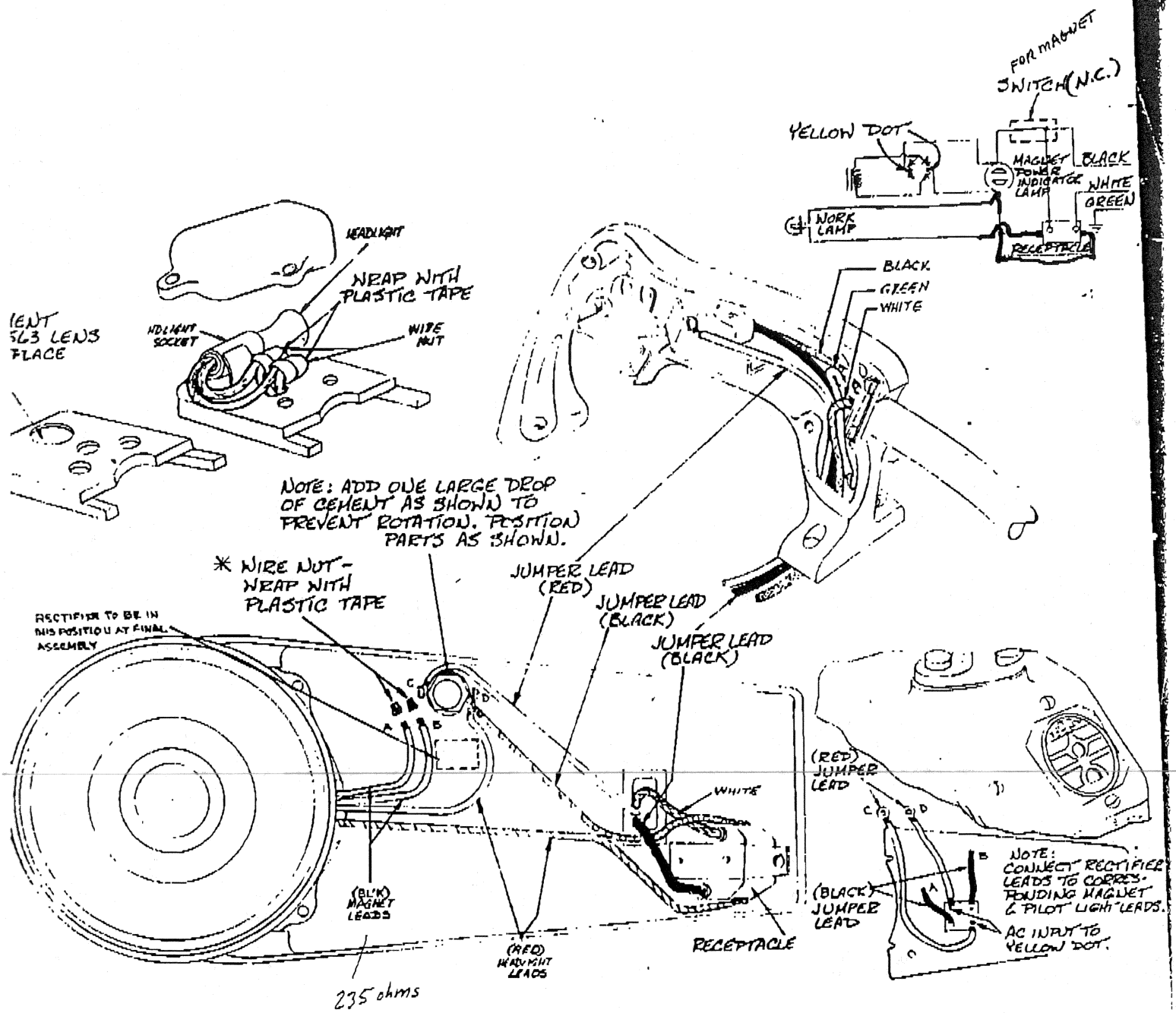
When spraying be sure to follow the spray solution manufacturer's recommendations for handling, personal protection and storage. Many sprayable solutions such as insecticides can be harmful if breathed, ingested or left on the skin.

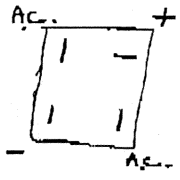
1551 Type 1



39499 CONNECTION DIAGRAM
THE BLACK & DECKER MFG. CO., TOWSON, MD.
MADE IN U.S.A. BULLETIN 3165

1551 TY1





Rectifier
view when looking at male terminals

D.C. OUTPUT 5/8 110 V D.C.

* AT ONE TIME THE RECTIFIER HAD JUMPER WIRES THAT WERE THEN WIRE NUTTED TO A+B MAG. LEADS. IF MAG LEADS ARE LONG ENOUGH, GO RIGHT TO A+B OF RECTIFIER.

68344 CONNECTION DIAGRAM
The Black & Decker Mfg. Co., Towson, Md.
Made in U. S. A. Bulletin No. 3435