



# BD100 MEGABRUTE

## Magnetic Drill Press

### Operating Manual



## CONTENTS

Hex Key 2.5mm, Hex Key 5.0mm, Safety Guard , Handles (3)  
 Safety Strap, 3MT Set Screw Arbor, 3MT Drift Key, Coolant Tank Assembly

## ARBORS

Set Screw Arbor Accepts Standard 3/4" Weldon Shank Annular Cutters.  
 Annular Cutter Depth Of Cut Capacity Is 2". 4" Depth Of Cut Can Be Achieved By Using 2 Piece Pilot Pin.

**\*Additional Arbors and Drill/Chuck Adaptors available for purchase.**  
 Contact Champion directly for information.

## MAGNETIC DRILL PRESS SPECIFICATIONS

POWER INPUT	1600 W (13.3A)
VOLTAGE	110 / 120V
MOTOR SPEEDS	Speed 1: 50-140, Speed 2: 80-230 Speed 3: 120-330, Speed 4: 180-510 RPM
MAGNETIC STRENGTH	3800 lb (1723 kg)

ANNULAR CUTTER CAPACITY*	4" DIAM X 4" DEPTH
TWIST DRILL CAPACITY*	1-1/4" DIAM
MACHINE DIMENSIONS	HEIGHT: 20-1/16 to 27-15/16 WIDTH: 12-3/16" OAL LENGTH: 13-3/8"
NET WEIGHT	61 lbs (28 kg)

## INTENDED USE

The intended use of this magnetic drill is to drill holes in ferrous metals. The magnet is used to hold the drill in place whilst the drill is functioning. It is designed for use in fabrication, construction, railways, petrochemical and any other applications when drilling ferrous metal.  
 Any deviation from its intended use will not be covered by warranty.

## GENERAL SAFETY RULES

**WARNING!** Follow all instructions listed below to prevent electric shock, fire and/or serious personal injury.



Cancer & Reproductive Harm. See P65warnings.ca.gov for more info.

## WORK AREA

1. Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.
2. 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.
3. Keep bystanders, children and visitors away while operating a power tool. Distractions can cause you to lose control.

## ELECTRICAL SAFETY

1. Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adaptor plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is grounded.
3. Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
4. Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.
5. When operating a power tool outside, use an outdoor extension cord marked "W-A" or "W". These cords are rated for outdoor use and reduce the risk of electric shock.
6. Use With 110/120V Supply Only.
7. Do not use on DC Supply.
8. Do not use magnetic drill on same structure when arc welding is in progress.

## PERSONAL SAFETY

1. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.
2. Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
3. Avoid accidental starting. Be sure switch is off before plugging in. Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.
4. Remove adjusting keys or switches before turning the tool on. A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
5. Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enable better control of the tool in unexpected situations.
6. Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hardhat, or hearing protection must be used for appropriate conditions.

## TOOL USE AND CARE

1. Use clamps or other practical way to secure and support the workpiece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.
2. Do not force tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.
3. Do not use tool if switch does not turn it on or off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.
4. Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.
5. Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.
6. Maintain tools with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
7. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.
8. Use only accessories that are recommended by the manufacturer or your model. Accessories that may be suitable for one tool, may become hazardous when used on another tool.

## MAGNETIC DRILL SAFETY

1. The drill's magnetic adhesion depends on the thickness of the work-piece. 1/2" (13mm) is the minimum thickness for safe operation.
2. Keep the magnet clean of metal chips and other dirt and debris. These will seriously reduce the magnetic adhesion.
3. The drill must be operated on its own electrical outlet.
4. Always use the supplied safety strap or chain. An electrical overload can result in loss of adhesion.

**CAUTION: The slug ejects at end of cut and is very hot.**

## SERVICE

1. Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
2. When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

## OPERATIONAL SAFETY PROCEDURES

- When using electrical tools, basic safety precautions should always be followed to reduce the risk of electric shock, fire, and personal injury.
- Ensure the magnet is OFF before plugging in the machine.
- Do NOT use in wet or damp conditions. Failure to do so may result in personal injury.
- Do NOT use in the presence of flammable liquids, gases or in high risk environments. Failure to do so may result in personal injury.
- BEFORE activating the machine, inspect all electrical supply cables (including extension leads), and replace if damaged. DO NOT use if there are any signs of damage.
- Only use extension cables approved for site conditions.
- BEFORE activating the machine, ALWAYS check the correct function of all operational systems, switches, magnet etc.
- BEFORE operating, the machine MUST be securely restrained to a fixed independent feature (by using a safety strap, or other means) to reduce the potential free movement, should the magnet become detached from the work piece. Failure to do so may result in personal injury.
- ALWAYS wear approved eye protectors, ear defenders and recommended PPE at ALL times when operating the machine.
- Disconnect from power source when changing cutters or working on the machine.
- Cutters and chips are sharp, ALWAYS ensure that hands are adequately protected when changing cutters or removing chips. Use a tool or brush where necessary to remove any chips or the cutter from the arbor.
- Before operating the machine, ALWAYS ensure cutter-retaining screws are secured tightly.
- Regularly clear the work area and machine of chips and dirt, paying particular attention to the underside of the magnet base.
- ALWAYS remove tie, rings, watches and any loose adornments that might entangle with the rotating machinery before operating.
- ALWAYS ensure that long hair is securely enclosed by an approved restraint before operating the machine.
- Should the cutter become stuck in the work piece, stop the motor immediately to prevent personal injury. Disconnect from power source and turn arbor to and from.  
DO NOT ATTEMPT TO FREE THE CUTTER BY SWITCHING THE MOTOR ON AND OFF.  
Wear safety gloves to remove the cutter from the arbor.
- If the machine is accidentally dropped, ALWAYS thoroughly examine the machine for signs of damage and check that it functions correctly BEFORE resuming drilling.
- Regularly inspect the machine and check for any damaged or loose parts.
- ALWAYS ensure when using the machine in an inverted position that only the minimum amount of coolant is used, and that care is taken to ensure that coolant does not enter the motor unit.
- Cutting tools may shatter, ALWAYS position the guard over the cutter before activating the machine. Failure to do so may result in personal injury.
- On completion of the cut, a slug will be ejected. DO NOT operate the machine as the ejected slug may cause injury.
- When not in use ALWAYS store the machine in a safe and secure location.
- ALWAYS ensure that approved CHAMPION authorized repair centers conduct repairs.

## OPERATIONAL INSTRUCTIONS

- Keep the inside of the cutter clear of chips. It restricts the operating depth of the cutter.
- Ensure that the coolant bottle contains sufficient cutting oil to complete the required operating duration. Refill as required.
- Occasionally depress the pilot to ensure cutting fluid is being correctly metered.
- To start the machine, follow the control panel operation instructions.
- ALWAYS switch off the motor by depressing the MOTOR stop button. DO NOT switch off the motor by depressing the MAGNET switch.
- Apply light pressure when starting the cut of a hole until the cutter is introduced into the work surface. Pressure can then be increased sufficiently to load the motor. Excessive pressure is undesirable, it does not increase the speed of penetration and will cause the safety overload protection device to stop the motor, (the motor can be restarted by operating the motor start button), and may cause excessive heat which may result in inconsistent slug ejection
- Always ensure that the slug has been ejected from the previous hole before commencing to cut the next.
- If the slug sticks in the cutter, move the machine to a flat surface, switch on the magnet and gently bring the cutter down to make contact with the surface. This will usually straighten a cocked slug and allow it to eject normally.
- Apply a small amount of light oil lubricant regularly to the slide and arbor support bearing.
- Cutter breakage is usually caused by insecure anchorage, a loosely fitting slide or a worn bearing in the arbor support. (Refer to routine maintenance instructions).
- Only use approved cutting fluid.

## CUTTER INSTALLATION

This mag drill accepts annular cutters with 3/4" (19.05mm) diam. Weldon shanks.

- 1 The pilot pin is used to both center the cutter and to eject the slug on completion of the cut. It has a flat side to allow coolant to run down to reach the center of the cut where the heat is greatest. Slide the pin through the hole in the center of the cutter shank.
- 2 Lay the machine on its side with feed handles uppermost, ensuring arbor is wound down to its lowest point to enable access to socket screws.
- 3 Take appropriate pilot and place through the hole in cutter shank. Insert shank of cutter into bore of arbor, ensuring alignment of two drive flats with socket screws. Tighten both screws using hexagon key.

**ALWAYS DISCONNECT THE MACHINE FROM THE POWER SOURCE BEFORE CHANGING CUTTERS.**



## **EXTENSION CABLE SELECTION**

- The machines are factory fitted with a 3 meter length of cable having three conductors 1.5 mm<sup>2</sup> LIVE, NEUTRAL and EARTH.
- If it becomes necessary to fit an extension cable from the power source, care must be taken in using a cable of adequate capacity. Failure to do so will result in a loss of traction by the magnet and a reduction of power from the motor.
- If the replacement of the supply cord is necessary, this must be done by the manufacturer or an approved agent in order to avoid a safety hazard.
- Assuming a normal AC supply of the correct voltage, it is recommended that the following extension lengths shall not be exceeded: For 110v supply: 3.5 meters of 3 core x1.5mm<sup>2</sup>

## **REPLACEMENT PARTS**

- Contact Champion directly for information regarding replacement parts.
- It is highly suggested that all repairs to this magnetic drill press are completed by one of Champion's authorized repair centers.

## MAINTENANCE

In order to 'get the best life' out of your Champion machine always keep it in good working order. Several items must always be checked on Champion machines.

Always before starting any job make sure the machine is in good working order and that there are no damaged or loose parts. Any loose parts must be tightened.

Before proceeding with any maintenance work be certain that the power supply is disconnected.

DESCRIPTION	EVERY OPERATION	WEEKLY	MONTHLY
VISUAL CHECK OF MACHINE FOR DAMAGE	X		
OPERATION OF MACHINE	X		
CHECK BRUSH WEAR		X	
CHECK MAGNETIC BASE	X		
CHECK GREASE			X
CHECK ARMATURE			X

### Visually check the machine for damage.

The machine must be checked before operation for any signs of damage that will affect the operation of the machine. Particular notice must be taken to the mains cable, if the machine appears to be damaged it should not be used, failure to do so may cause injury or death.

### Check operation of the machine.

The machines operation must be checked to ensure that all components are working correctly.

**Machine Brushes** - should be checked to make sure there is no abnormal wear present (this should be checked at least once a week if used frequently). If the brush has worn more than 2/3 the original length the brushes should be changed. Failure to do so may cause damage to the machine.

**Magnetic base** – before every operation the magnetic base should be checked to make sure that the base is flat and there is no damage present. An uneven magnet base will cause the magnet not to hold as efficiently and may cause injury to the operator.

### Check machines grease.

The gearbox grease should be checked once a month to ensure all moving components are covered to prevent wear. The grease should be changed at least once a year to ensure you gain the best from your machine.

### Check Armature of the machine.

This should be checked at least once a month to check that there are no visual signs of damage to the body or to the commutator. Some signs of wear will be seen on the commutator over a period of time, but this is normal (this is the part that comes into contact with the brushes) however, if there are any signs of abnormal damage the part should be replaced.

## REMEDIES FOR HOLE MAKING PROBLEMS

PROBLEM	CAUSE	REMEDY
1) Magnetic base will not hold effectively	<p>Material being cut may be too thin for efficient holding.</p> <p>Chips or dirt under magnet.</p> <p>Irregularity on magnet contact or workpiece.</p> <p>Insufficient current going to magnet during drilling cycles.</p>	<p>Attach an additional piece of metal under the magnet, or mechanically clamp magnetic base to workpiece.</p> <p>Clean magnet.</p> <p>Use extreme care; file any imperfections flush to surface.</p> <p>Confirm power supply and output from control unit, check supply cable.</p>
2) Cutter skips out of center-punch mark at initiation of cut	<p>Magnetic base is not holding effectively.</p> <p>Worn arbor bushing and/or ejector collar.</p> <p>Too much feed pressure at start of cut.</p> <p>Cutter is dull, worn, chipped or incorrectly sharpened.</p> <p>Poor center-punch mark; weak pilot spring; pilot not centered in centre-punch mark.</p> <p>Worn or bent pilot, worn pilot hole.</p>	<p>See causes and remedies above.</p> <p>New arbor bushing is needed.</p> <p>Light pressure only is needed until a groove is cut. The groove then serves as a stabilizer.</p> <p>Replace or re-sharpen. Sharpening service is available.</p> <p>Improve center-punch and/or replace worn parts Worn or bent pilot, worn pilot hole.</p> <p>Replace part or parts</p>
3) Excessive drilling pressure required	<p>Incorrectly re-sharpened, worn or chipped cutter.</p> <p>Coming down on chips lying on surface of workpiece.</p> <p>Chips accumulated (packed) inside cutter.</p>	<p>Re-sharpen or replace.</p> <p>Take care not to start a cut on chips.</p> <p>Clear cutter.</p>
4) Excessive cutter breakage	<p>Steel chips or dirt under cutter.</p> <p>Incorrectly re-sharpened or worn cutter.</p> <p>Cutter skipping.</p> <p>Cutter not attached tightly to arbor.</p> <p>Insufficient use of cutting oil or unsuitable type of oil.</p> <p>Incorrect speed</p>	<p>Remove cutter, clean part thoroughly and replace.</p> <p>Always have a new cutter on hand to refer to for correct tooth geometry, together with instruction sheet.</p> <p>See causes and remedies (2).</p> <p>Retighten.</p> <p>Inject oil of light viscosity into the coolant-inducing ring and check that oil is being metered into cutter when pilot is depressed. If not, check pilot groove and arbor internally for dirt or apply oil externally. (Even a small amount of oil is very effective).</p> <p>Ensure correct speed is use for the cutter.</p>
5) Excessive cutter wear	<p>See cause and remedy above</p> <p>Incorrectly re-sharpened cutter.</p> <p>Insufficient or spasmodic cutting pressure.</p>	<p>Refer to instructions and a new cutter for proper tooth geometry.</p> <p>Use sufficient steady pressure to slow the drill down. This will result in optimum cutting speed and chip load.</p>



## TROUBLESHOOTING

Magnet and motor do not function	<ul style="list-style-type: none"> <li>- The magnet switch is not connected to the power supply</li> <li>- Damaged or defective wiring</li> <li>- Defective magnet switch</li> <li>- Defective control unit</li> <li>- Defective power supply</li> </ul>
Magnet does function, the motor does not	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Carbon brushes are stuck or worn out</li> <li>- Defective magnet switch</li> <li>- Defective on / off switch</li> <li>- Defective control unit</li> <li>- Defective armature and/or field</li> </ul>
Magnet does not function, the motor does	<ul style="list-style-type: none"> <li>- Defective magnet</li> <li>- Defective control unit</li> </ul>
Hole cutters break quickly, holes are bigger than the hole cutter	<ul style="list-style-type: none"> <li>- Play in the guide</li> <li>- Bent spindle</li> <li>- Shaft extending from the motor is bent</li> <li>- Pilot bent</li> </ul>
Motor running roughly and/or seizing up	<ul style="list-style-type: none"> <li>- Bent spindle</li> <li>- Shaft extending from the motor is bent</li> <li>- Triangular guide not mounted straight</li> </ul>
Motor making a rattling sound	<ul style="list-style-type: none"> <li>- Gear ring (bottom of the armature) worn out</li> <li>- Gear(s) worn out</li> <li>- No grease in gear box</li> </ul>
Motor humming, big sparks and motor has no force	<ul style="list-style-type: none"> <li>- Armature damaged</li> <li>- Field burned</li> <li>- Carbon brushes worn out</li> </ul>
Motor does not start or fails.	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Damage to armature or field coil</li> <li>- Damaged or defective brushes</li> </ul>
Insufficient magnetic force	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Bottom of magnet not clean and dry</li> <li>- Bottom of magnet not flat</li> <li>- Work piece is not bare metal</li> <li>- Work piece is not flat</li> <li>- Work piece is too thin less than 10mm</li> <li>- Defective control unit</li> <li>- Defective magnet</li> </ul>
Frame under voltage	<ul style="list-style-type: none"> <li>- Damaged / defective wiring</li> <li>- Defective magnet</li> <li>- Motor seriously dirty</li> </ul>
Fuse blows when magnet switch is turned on	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Wrong value fuse</li> <li>- Defective magnet switch</li> <li>- Defective control unit</li> <li>- Defective magnet</li> </ul>
Fuse blows when motor is started up	<ul style="list-style-type: none"> <li>- Damaged or defective wiring</li> <li>- Motor running roughly</li> <li>- Defective armature and / or field</li> <li>- Carbon brushes worn out</li> <li>- Defective control unit</li> </ul>
Rotation system free stroke too long	<ul style="list-style-type: none"> <li>- Loose or defective gear-rack</li> <li>- Defective rotation system</li> </ul>

## RECOMMENDED SPEED GUIDELINES

HSS (High Speed Steel) Annular Cutters						
Gear Setting	Speed Setting					
	Gear 1	1	2	3	4	5
		4"	3-1/8"	3"	2-5/16"	2-1/4"
			3-1/4"		2-3/8"	
			3-3/8"		2-7/16"	
			3-1/2"		2-1/2"	
			3-5/8"		2-9/16"	
Gear 2	1	2	3	4	5	6
	3-3/4"	2-5/8"	2"			
	3-7/8"	2-11/16"	2-1/16"			
	3-15/16"	2/3/4"	2-1/8"			
			2-3/16"			
Gear 3	1	2	3	4	5	6
		1-7/8"	1-5/16"		1-1/16"	7/8"
			1-3/8"			15/16"
			1-7/16"			
			1-1/2"			
Gear 4	1	2	3	4	5	6
	1-9/16"	1-1/8"	3/4"		5/8"	7/16"
	1-5/8"	1-3/16"	13/16"		11/16"	1/2"
	1-3/4"	1-1/4"	1"			9/16"

TCT (Carbide Tipped) Annular Cutters						
Gear Setting	Speed Setting					
	Gear 1	1	2	3	4	5
				3-1/2"	2/3/4"	2-1/2"
				3-5/8"	3"	2-9/16"
					3-1/8"	2-5/8"
						2-11/16"
Gear 2	1	2	3	4	5	6
		3-1/4"	2-7/16"	2-1/8"	1-7/8"	
		3-3/8"		2-3/16"		
Gear 3	1	2	3	4	5	6
		2-1/4"	1-9/16"	1-7/16"	1-3/8"	1-1/8"
		2-5/16"	1-5/8"	1-1/2"		1-3/16"
		2-3/8"	1-3/4"			
Gear 4	1	2	3	4	5	6
	2"		7/8"		3/4"	7/16"
	2-1/16"		15/16"		13/16"	1/2"
			1"			9/16"
			1-1/16"			5/8"
			1-1/4"			11/16"
			1-5/16"			

## Optimize Performance Of Your Tools Use BruteLube Fluid or Wax



## Champion Offers A Complete Range Of HSS & Carbide Tipped Annular Cutters



Visit [championcuttingtool.com](http://championcuttingtool.com) for more information

## WARRANTY

Champion warrants its magnetic drill presses to be free from faulty parts, under normal usage of machines, for a period of 12 months from initial date of purchase. All other parts (excluding cutters) are under warranty for 90 days, provided that the warranty online registration has been completed and returned to Champion or its designated distributor within a period of (30) days from the purchase date. Failure to do so will void the warranty. If the stated is adhered to, Champion will repair or replace (at its option) without charge any faulty items returned.

This Warranty does not cover:

1. Components that are subject to natural wear and tear caused by the use is not in accordance with the operator's instructions
2. Defects in the tool caused by non-compliance with the operating instructions, improper use, abnormal environment conditions, inappropriate operating conditions overload or insufficient servicing or maintenance.
3. Defects caused by using accessories, components or spare parts other than original Champion parts.
4. Tools to which changes or additions have been made.
5. Electrical components are subject to manufacturer's warranty.

The warranty claim must be logged within the warranty period. This requires the submission or sending of the complete tool in question with the original sales receipt which must indicate the purchase date of the product. A complaint form must also be submitted prior to the return.

All goods returned defective must be returned pre-paid to Champion, in no event shall Champion be liable for subsequent direct, or indirect loss or damage.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, (EXPRESSED OR IMPLIED) INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PURPOSE. CHAMPION RESERVES THE RIGHT TO MAKE IMPROVEMENTS AND MODIFICATIONS TO DESIGN WITHOUT PRIOR NOTICE