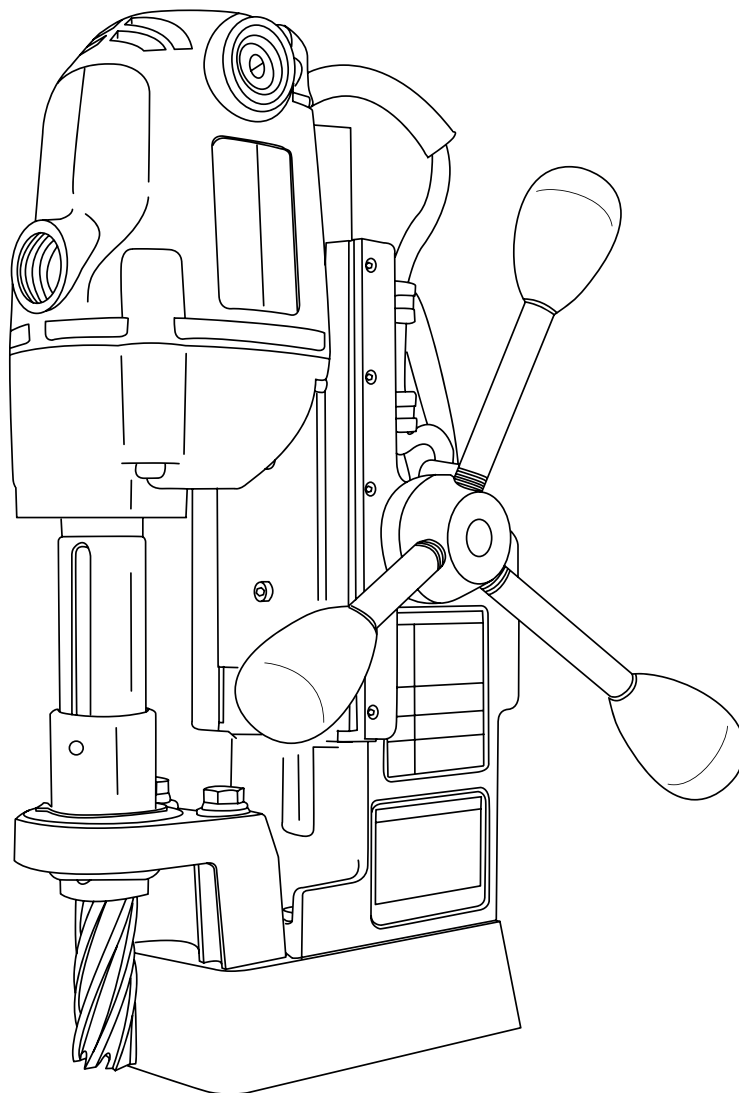




**HMD908/HMD908AUS  
HMD908CAUS/HMD908CSGP  
PORTABLE MAGNETIC DRILLS  
OPERATOR'S MANUAL**



**FOR USE WITH "12,000-SERIES" HOUGEN® CUTTERS**

# HOUGEN®

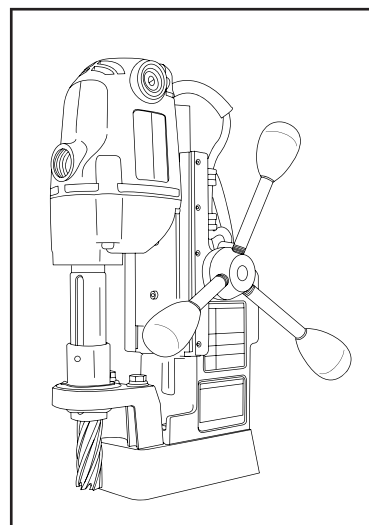
## Portable Magnetic Drills

### Model HMD908

### Welcome to Hougen

Congratulations on your purchase of the Hougen® Portable Magnetic Drill. Your model is designed to produce superior holes quickly and efficiently. Through constant innovation and development, Hougen is committed to provide you with hole-producing tools and products to help you be more productive.

Before attempting to operate your new Portable Magnetic Drill, please read all instructions first. These include the Operator's Manual and Warning Label on the unit itself. With proper use, care, and maintenance, your model will provide you with years of effective hole drilling performance. Once again, thank you for selecting our product and welcome to Hougen.



#### Specifications

Cutter Type.....Hougen "12,000-Series"  
Hole Capacity.....12mm to 38mm  
Depth of Cut.....50mm  
Motor.....450 RPM, 4A  
Net Weight.....12.5 Kg

## COM. / IND. LIMITED WARRANTY

Hougen Manufacturing, Incorporated warrants its Portable Magnetic Drills, Electro-hydraulic Hole Punchers, and Tornado II Paint Shaker for one (1) year and its and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc. disclaims any implied warranty of MERCHANTABILITY or FITNESS for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusions of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid, to your nearest Factory Authorized Warranty Repair Center or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, Michigan 48473.

Hougen Drills are warranted against manufacturing defects only. Subject to Hougen Manufacturing inspection.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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#### HOUGEN PATENT NOTICE

The products in this manual may be covered by one or more of the following U.S. patents, foreign patents, and pending patents:

5902076

Photographs and Specifications shown are accurate in detail at time of printing. Manufacturer reserves the right to make improvements and modifications without prior notice.

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# UNPACKING YOUR NEW MAGNETIC DRILL

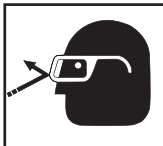
1. Open shipping carton and remove the literature and hardware packages.
2. **Read and Follow All Instructions** before attempting to operate your new Magnetic Drill.
3. Complete and mail the Product Registration Card now. It is important that Hougen Manufacturing, Inc. have a record of product ownership.
4. Open hardware package and check contents.
  - 10565 1/8" Hex wrench for Gib Adjustment
  - 04558 Feed handles (3)
  - 04532 Feed handle knobs (3)
  - 10506 Set screw for cutter installation (2)
  - 10730 Safety chain
  - 02635 Hex wrench for cutter installation
  - 13013 5/32" Hex wrench
5. Using the handle of Magnetic Drill, lift unit out of the shipping case.
6. Remove all packing and securing material from the drill unit.
7. Screw the three Knobs (04532) into the three Feed Handles (04558) and then screw Handles into the Hub Assembly (40254).
8. Your Magnetic Drill was factory adjusted prior to shipping. Check to make sure that all gib adjustment screws, motor mount screws, front support bracket screws, and magnet mounting screws are snug and have not vibrated loose in transit.
9. Your new Magnetic Drill comes complete with arbor mounted. The 3/4" diameter arbor bore fits all 3/4"-shank "12,000-Series" Hougen Cutters.

**Reread Safety Warnings listed in the Operator's Manual and on the drill unit to avoid injury. Follow operating procedures.**

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## SAFETY FIRST



Always wear eye protection while using cutting tools, or in the vicinity of cutting.



**CAUTION!** The slug is ejected at the end of the cut. Do not aim cutter or arbor so that ejected slug may hit someone around, or below you.



**CAUTION!** Cutters are sharp. Wear gloves when installing or removing cutter from arbor. Do not grab a rotating cutter.



**CAUTION!** To prevent electric shock, do not use power tools near wet areas, or where power tool may become wet.

# Important Safety Instructions



**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:

## 1. Read All Instructions

## 2. Grounding Instructions

This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with a 3-conductor cord and a 3-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. (Refer to Plug Diagram) Section A

## 3. Safe Electrical Connection

Your Mag Drill is rated for use on 115VAC (Plug A) or 230V (Plug B) at 50-60Hz. Do not attempt to use drill on power sources rated other than this. Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop in the power cord. Also elevate extension cords or gang box connections.

## 4. Extension Cords

Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool's plug. Replace or repair damaged cords. Make sure the conductor size is large enough to prevent excessive voltage drop which will cause loss of power and possible motor damage.

## 5. Do Not Force Tool

It will do the job better and faster at the rate for which it was intended.

## 6. Keep Work Area Clean

Cluttered areas and benches invite injuries. Keep dirt and chips from under the Cutter area.

## 7. Consider Work Area Environment

Do not expose tool to rain.  
Do not use tool in damp or wet locations.  
Keep work area well lit.  
Do not use tool in presence of flammable liquids or gases. Disconnect from power source when changing cutters or maintaining drill.

## 8. Guard Against Electric Shock

Prevent body contact with grounded surfaces. For example: pipes, radiators, ranges, refrigerator enclosures.

## 9. Keep Children Away

Do not let visitors contact tool. All visitors should be kept away from work area while in use.

## 10. Store Idle Tools

When not in use, tools should be stored in a dry, and high or locked-up place — out of reach of children.

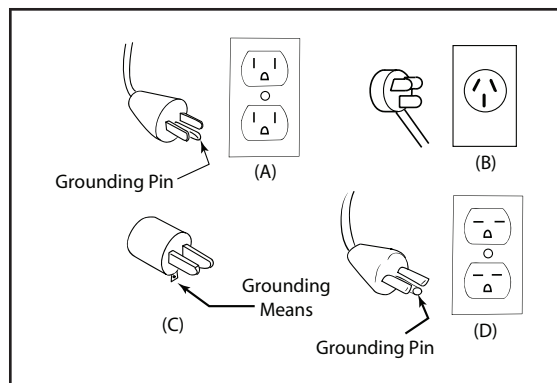
## 11. Use Right Tool

Do not force small tool or attachment to do the job of a heavy duty tool.  
Do not use tool for purpose not intended — for example — do not use a circular saw for cutting tree limbs or logs.

### Extension Cord Table

LENGTH OF CORD, FEET	RECOMMENDED WIRE GAUGE	RECOMMENDED WIRE GAUGE
	115V MOTOR 10 - 12 AMPS	230 V MOTOR 5 - 6 AMPS
UP TO 25	16	18
26 - 50	14	18
51 - 100	10	16
101 - 200	8	14
201 - 300	6	12
301 - 500	4	10

### Plugs and Receptacles



## 12. Non-Conforming Cutting Tools

Your Mag Drill is designed to use Houghen Cutters. The use of drilling tools having different shank styles is not recommended as they may not tighten securely in the drill arbor with risk of accident or injury.

## 13. Secure Work

Use clamps or a vise to hold work. It is safer than using your hand and it frees both hands to operate tool.

## 14. Always Wear Safety Glasses or Goggles

## 15. Dress Properly

Do not wear loose clothing or jewelry. They might entangle with spinning chips or get caught in moving parts. Rubber gloves and nonskid foot wear are recommended when working outdoors. Wear sturdy leather gloves when working indoors. Wear protective hair covering to contain long hair.

## 16. Do Not Abuse Cord

Never carry drill unit by its cord or yank it to disconnect from receptacle. Keep cord away from heat, oil, and sharp edges.

## 17. Do Not Overreach

Keep proper footing and balance at all time.

# Important Safety Instructions - Continued

## 18. Maintain Tools With Care

Keep tools sharp and clean for better and safer performance. Do not use dull or broken Houghen Cutters. 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, if damaged, have repaired by authorized service facility. Keep handles dry, clean, and free from oil and grease.

## 19. Disconnect Tools

Disconnect when not in use, before servicing, and when changing cutters or accessories.

## 20. Remove Adjusting Keys and Wrenches

Form a habit of checking to see that keys and wrenches are removed from tool before turning it on.

## 21. Check Damaged Parts

Before further use of the drill, a 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 part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this operator manual. Do not operate tool if switch does not turn it on and off.

## 22. Stay Alert

Watch what you are doing and use common sense. Do not operate tool when you are tired. Have defective switches replaced by authorized service center.

## 23. Outdoor Use Extension Cords

When tool is used outdoors, use only extension cords intended for use outdoors and so marked.

## 24. Additional Safety Precautions

Arbor and cutter should never be used as a hand-hold. Keep hands and clothing away from all moving parts. Do not use Houghen Cutters where ejected slug might cause injury (slug ejected at end of cut). Also, adhere to all operating instructions. Do not drill through any surface that may contain live electrical wiring. Drilling into a live wire could cause exposed metal parts of the drill to be made live. Remove chips wrapped around Cutter and arbor after each hole. With motor off and power disconnected, grasp chips with leather gloved hand or pliers and pull while rotating counterclockwise. Should the cutter become jammed in the work, stop the unit immediately to prevent personal injury. Disconnect the drill from the power supply and loosen jammed cutter by turning the arbor counterclockwise. Never attempt to free the jammed cutter by starting the motor. Service at authorized repair center only.

## 25. Operating Near Welding Equipment

DO NOT operate this unit on the same work surface that welding is being performed on. Severe damage to the unit, particularly the power cord, could occur. This could also result in personal injury to the operator.

## 26. Circuit Breaker

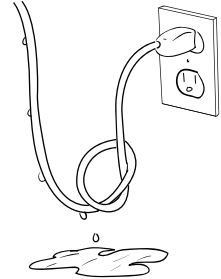
Changing of the circuit breaker to a higher amp rated breaker, or bypassing the circuit breaker is not recommended and will void product warranty.

## 27. Circuit Breaker Operation

The circuit breaker is a thermal breaker. When it reaches the higher temperature rating it will trip and cause the unit to shut down. This is a protective device and can be reset after 5 to 10. To reset the breaker, press the breaker button back in. If it does not reset, let the unit cool a little longer until you can push the button in and it stays in position.

## 28. Safe Electrical Connection

Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop as shown. Also elevate extension cords or gang box connections.



## 29. Save these Instructions.

## SAFETY SWITCH INDICATOR LIGHT

The Safety Switch Indicator Light is a Standard Safety Feature on HMD908 magnetic drills. Its purpose is to inform the user that an unsafe condition exists.

### If light is Green:

In normal operation the safety switch light will be green. Motor "On" and "Off" Switches function normally.

### If light is Red:

A condition with the safety switch exists that needs to be corrected.

Possible causes:

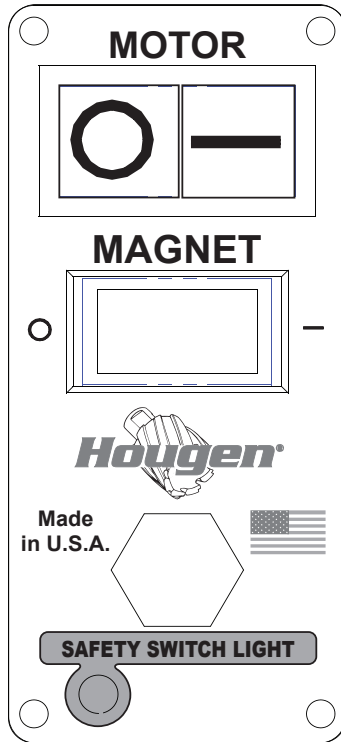
- Safety Switch is defective. Have drill serviced.
- Uneven work surface or material. Check work surface for flatness.
- Dirt or chips under magnet. Clean work surface.
- Too thin material. Make sure material is at least 3/8" thick.

**HOUGHEN MANUFACTURING RECOMMENDS THAT CONDITIONS ARE CORRECTED SO LIGHT TURNS GREEN. THIS ALLOWS FOR THE UNIT TO BE OPERATED IN A SAFE MANNER.**

When light is Red the motor will still function, but "ON" switch becomes a momentary switch. (The switch must be held down to operate motor.)

For any questions please contact Houghen Manufacturing's Technical Service at (810) 635-7111.

## OPERATION OF CONTROLS BEFORE INSTALLING HOUGEN CUTTER



CONTROL PANEL SWITCH PLATE  
FIGURE 2

**IMPORTANT:** Before turning on the machine, it is important that the operator understands the interrelated functions of the SAFETY SWITCH, MAGNET SWITCH, AND MOTOR SWITCH.

**READ SAFETY SWITCH INDICATOR LIGHT INSTRUCTIONS ON PREVIOUS PAGE.**

**SAFETY SWITCH** — Located in base of drill. Enables motor operation only when magnet is properly seated on a clean and flat work surface. Turns motor off if switch detects lift of unit.

**MAGNET ON/OFF SWITCH** — Energizes and De-energizes the magnetic base and activates the safety switch. Motor can now be started by pushing the motor START switch.

**MOTOR START/STOP SWITCH** — Starts and stops the motor (See instructions previous page).

1. Place Magnetic Drill on clean, flat steel plate that is at least 9.5mm thick.
2. Plug unit into proper AC power source. **DO NOT use with DC Power.**
3. Locate the Magnet **ON** and **OFF** switch and the motor **STOP** and **START** switch (Fig. 2).
4. **NOTE: A loss of power will de-energize the magnetic base and deactivate the motor. When power is restored, the magnet will reenergize, however, the motor START switch must be depressed before the motor will start.**

## OPERATING INSTRUCTIONS

Always remember that the magnet's holding power is directly related to the workpiece thickness and surface condition. (Rating of 748 Kg pull is based on test using a 25mm thick ground surface.) Since magnetic attraction diminishes with thinner material or rough surfaces, mechanical clamping of drill unit to the workpiece should be used when cutting thin material (9.5mm or less) or material with uneven surfaces.

1. Make sure workpiece and bottom of magnet are free of chips, oil, etc.
2. Position drill by sliding it and gently feeding Arbor so that pilot point is touching center of hole to be drilled.
3. Secure unit to workpiece with safety chain.
4. Turn magnet ON by pressing the magnet ON switch.
5. Turn Feed Handle, raising the cutter until the pilot is above the work surface.
6. Make certain that cutter is clear of workpiece and turn motor ON by pressing the motor START switch.
7. Feed Hougen Cutter slowly into workpiece. Only after cutting path is established to a depth of about 2mm can full force be applied to feed handles.
8. Ease up on feed pressure as cutter starts breaking through.
9. At conclusion of cut, turn motor OFF by pressing motor STOP switch. Turn Feed Handles to raise Arbor thereby ejecting the slug if it hasn't already fallen free.
10. Turn magnet OFF by pressing the magnet OFF switch.
11. **Disconnect from power source.**
12. If necessary, remove chips from cutter and magnet, preferably wearing leather work gloves and/or with pliers. Disconnect safety chain and you are ready to move unit to new drilling position.

## INSTALLING HOUGEN CUTTER IN ARBOR

1. Disconnect from power source.
2. Lay drill on its side with feed handles up or be sure Arbor clears table if unit is in normal operating position.
3. Turn Feed Handles until cutter mounting set screws are exposed and completely remove the set screw.
4. Insert proper pilot in shank end of Hougén Cutter.
5. Insert Hougén Cutter until flat on cutter shank is aligned with set screw holes and is exactly perpendicular to axis of set screw holes.
6. Insert set screws and tighten. Check to be certain that cutter is secure.

## ADJUSTMENT OF GIBS

1. Loosen all Gib Screws (40237).
2. Feed the drill in and out a few times and then, with top of motor slide flush with top of housing, tighten the Gib Screws until you feel them touch the Steel Gib (02431).
3. Feed the drill in and out again.
4. Adjust Gib Screws so that there is uniform pressure from top to bottom. (Top of motor slide flush with top of housing.)
5. Turn each Gib Screw in about 1/8 to 1/4 turn, depending upon your preference.
6. Gibs should be tight enough so that slide moves up and down smoothly with no wobble or shaking. (Looseness will cause cutter breakage.)

**NOTE: Gibs should be lubricated regularly with general purpose grease.**

## ARBOR ADJUSTMENT

**Adjust Gibs before adjusting front support bracket.**

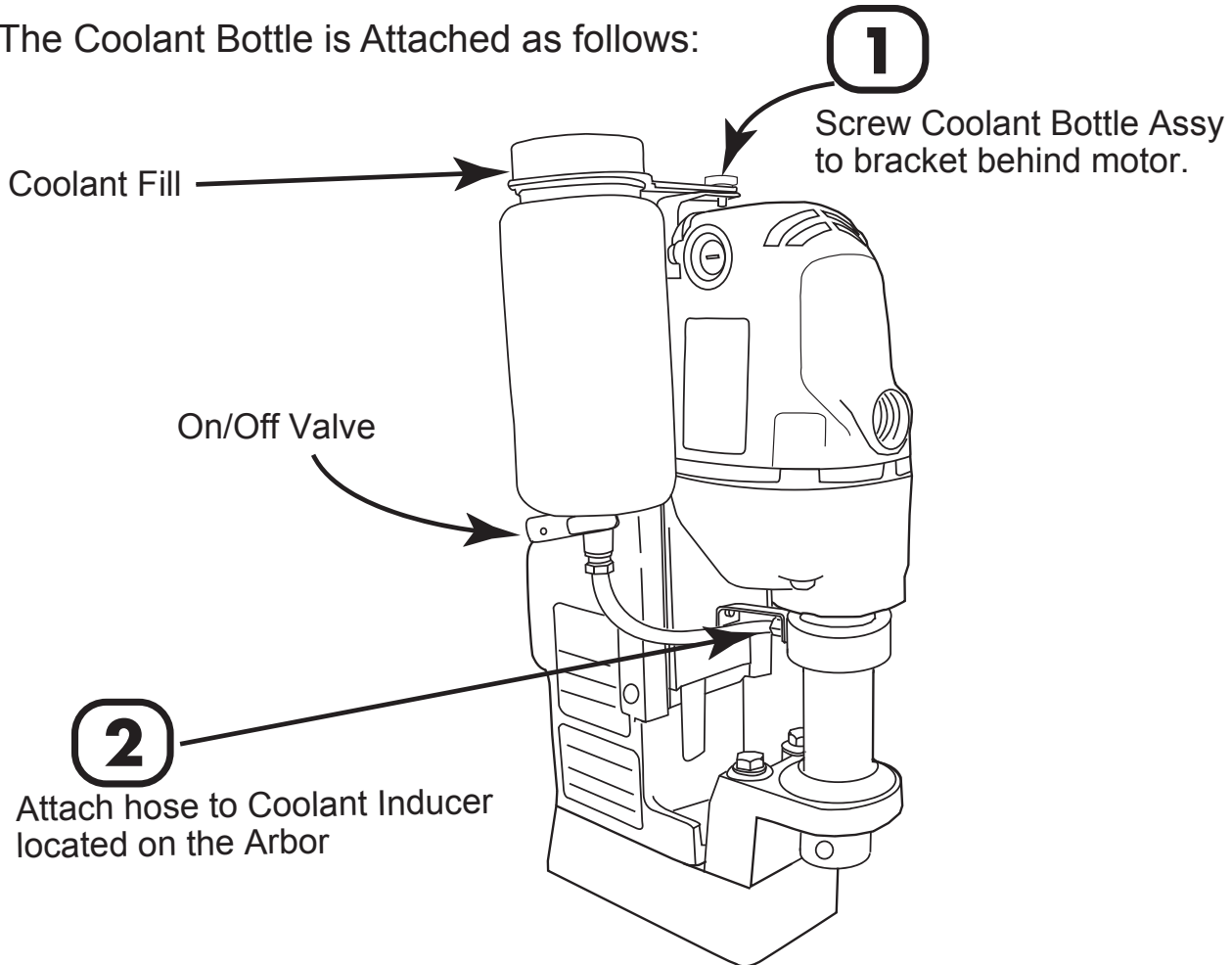
1. Loosen Arbor Support Bracket Bolts.
2. Be sure top of arbor is flush with the shoulder on motor output shaft. Also make certain arbor is securely fastened.
3. Turn feed handle until motor and spindle are at the bottom of their travel.
4. Tighten Arbor Support Bolts.
5. Feed slide up and down a few times, checking for free and uniform movement.

**NOTE: Check Arbor support bolts regularly to make certain they are tight. Tighten as required.**



## INSTALLING COOLANT BOTTLE HMD908C MODELS

The Coolant Bottle is Attached as follows:



### Instructions for Use:

1. Fill Coolant Bottle with properly mixed RotaMagic™ Cutting Fluid.
2. Turn On/Off Valve to "On" position.
3. Press pilot gently down on work surface. (Coolant should slowly release from bottom of cutter.)
4. Continue with drilling operation.

## OPERATION OF ARBOR WITH CUTTING FLUID RESERVOIR - HMD908 MODELS

1. With Magnetic Drill in operating position, turn the feed handles so that cutter and pilot are above the work surface.
2. With magnet turned ON and motor OFF, fill reservoir by introducing cutting fluid through slots in Arbor.  
**Cutting fluid should not leak out.**
3. Test metering capabilities of Arbor/Cutter/Pilot assembly (magnet ON-motor OFF) by feeding the Arbor gently toward work surface until pilot is pushed up into Cutter, thus allowing fluid to filter down onto work surface through groove in pilot.
4. For proper lubrication, all cutting fluid in reservoir should empty onto work surface in no less than 15 seconds and no longer than 30 seconds



# MAINTENANCE

In order to minimize wear on moving parts and to insure smoother operation and longer life for your magnetic drill, the following maintenance should be done periodically, based on use

1. Regularly tighten all fasteners and replace all worn parts.
2. Check motor brushes and replace if worn. (Break in period - 30 minutes at no load speed)
3. Check power cord and cord from panel to motor and, if cracked or frayed, return to an authorized repair center for replacement.
4. Apply grease to the slide dovetails, brass gibs, and the feed gear rack. For best results use Shell Cyprina-RA or equivalent.
5. Remove arbor and pack the bearing in the front support bracket with grease. Use Shell Cyprina-RA or equivalent.

## HINTS FOR SMOOTHER OPERATION

1. Keep insides of Hougen Cutter clear of chips. Chips will interfere with cutting to maximum depth, may impede the free flow of lubricant and can cause cutter breakage.
2. Keep work, machine, arbor and Hougen Cutter free of chips and dirt.
3. Tighten all bolts and fasteners regularly.
4. We highly recommend using a light viscosity cutting fluid (preferably Hougen RotaMagic Cutting Fluid)
5. Occasionally check metering of cutting fluid flow. Lack of cutting fluid may cause Hougen Cutter to freeze in cut, slug to stick and may result in poor cutter life.
6. Always start cut with light feed pressure and then increase sufficiently to achieve maximum cutting rate.
7. Ease off on pressure as cutter begins to break through at the end of the cut.
8. Keep slide dovetails, brass gibs and feed rack lubricated and free of chips and dirt.
9. When slug hangs up in cutter, bring cutter down on a flat surface. This will normally straighten a cocked slug, allowing it to be ejected.
10. When cutting large diameter or deep holes it may be necessary to stop in the middle of the cut to add cutting fluid and remove the chips from around the arbor. (When doing this DO NOT raise the cutter out of the hole. Doing so can allow chips to get under the teeth of the cutter and make it difficult to restart the cut.)

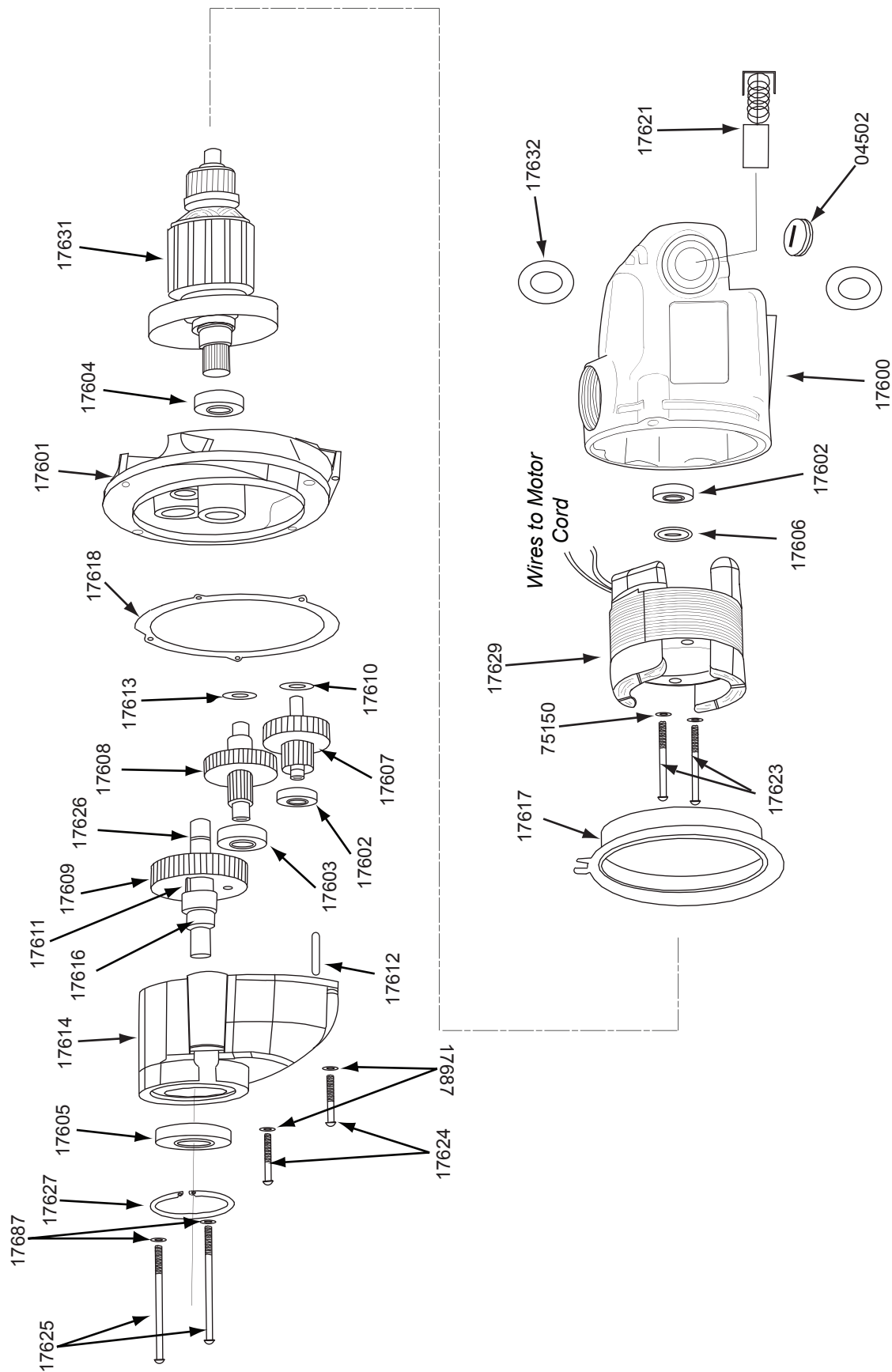
**#1 cause of cutter breakage and prematurely dull teeth is too little feed pressure**

## REMEDIES FOR HOLEMAKING PROBLEMS

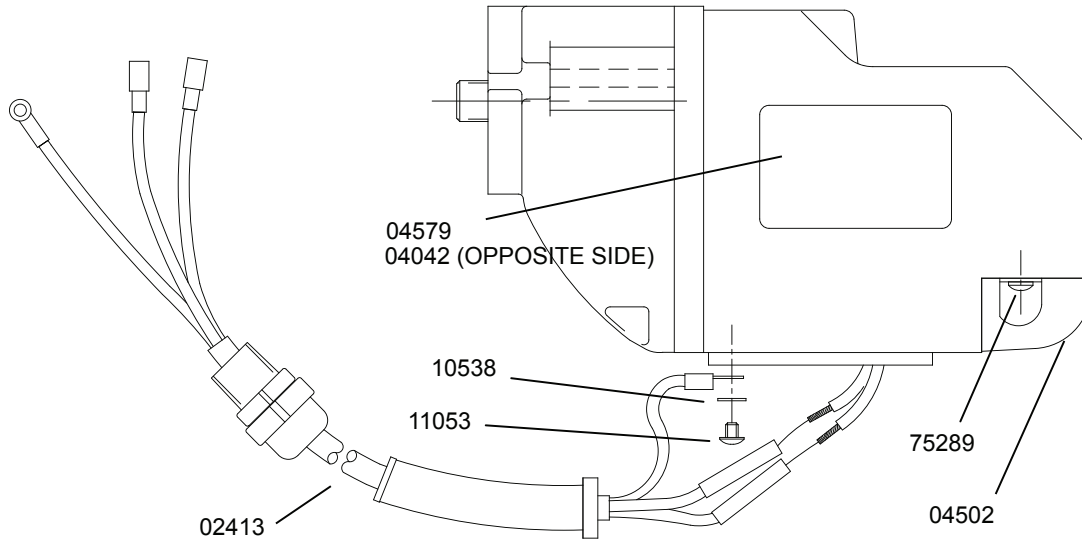
1. **Trouble: Magnetic base won't hold effectively to work.**
  - a. Cause: Chips or dirt under magnet.  
*Remedy:* Clear area of chips and dirt.
  - b. Cause: Irregular surface on bottom of magnet or on workpiece.  
*Remedy:* Lightly surface grind the bottom of the magnet flat and/or file imperfections flat on the work surface as needed.
2. **Trouble: Cutter tends to move across surface of work.**
  - a. Cause: Magnetic base not holding effectively.  
*Remedy:* See causes and remedies under No. 1 above.
  - b. Cause: Too much feed pressure at start of cut.  
*Remedy:* Light pressure until a groove is cut. The groove then serves as a stabilizer.
  - c. Cause: Worn pilot.  
*Remedy:* Replace pilot
3. **Trouble: Out of round holes.**
  - a. Cause: Worn arbor support bracket bearing and or ejector collar.  
*Remedy:* Replace: (only a few thousandths wear permissible.)
  - b. Cause: Misaligned support bracket  
*Remedy:* Realign support bracket
4. **Trouble: Motor and slide won't stay in set position**
  - a. Cause: Gibs too loose  
*Remedy:* Adjust gibs
5. **Trouble: Erratic or intermittent feed.**
  - a. Cause: Worn or pinion and/or rack.  
*Remedy:* Replace worn parts.
6. **Trouble: Motor doesn't run when motor START button is pushed.**
  - a. Cause: Magnet is not turned on.  
*Remedy:* Push magnet ON button.
  - b. Cause: Magnet on rough or dirty work surface and safety switch not fully depressed.  
*Remedy:* File work surface flat and clean all chips and oil from under magnet.
  - c. Cause: No power.  
*Remedy:* Check power source and extension cords.
  - d. Cause: Worn motor brushes.  
*Remedy:* Replace brushes.
  - e. Cause: Faulty motor START switch.  
*Remedy:* Return unit to an authorized repair center to have switch replaced.

**NOTE: If you are unable to correct any malfunction after trying the above, do not attempt to operate the drill. Return the unit to the factory or authorized Repair Center for service.**

# MOTOR PARTS DIAGRAM



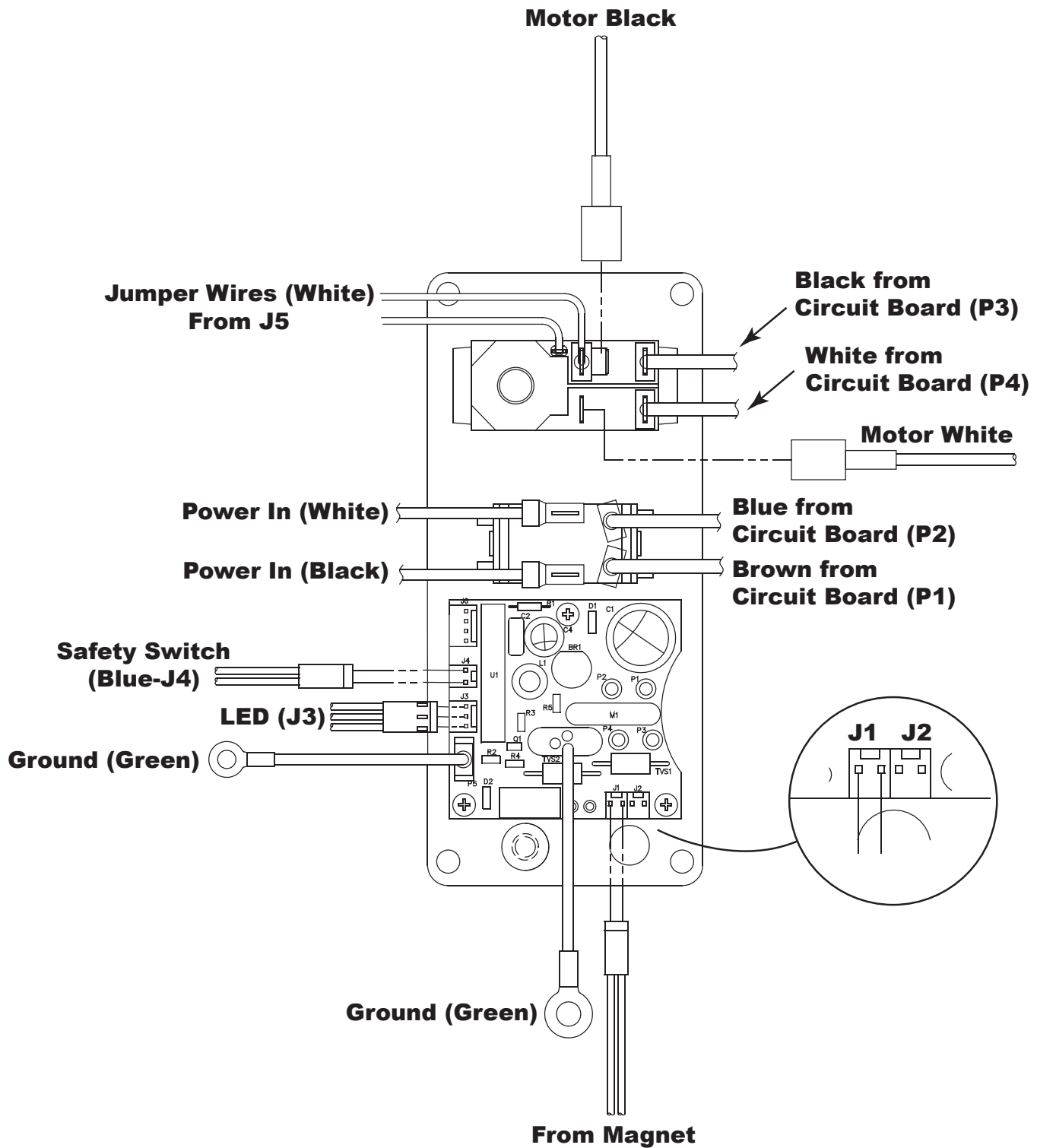
## MOTOR PARTS DIAGRAM (CONT)



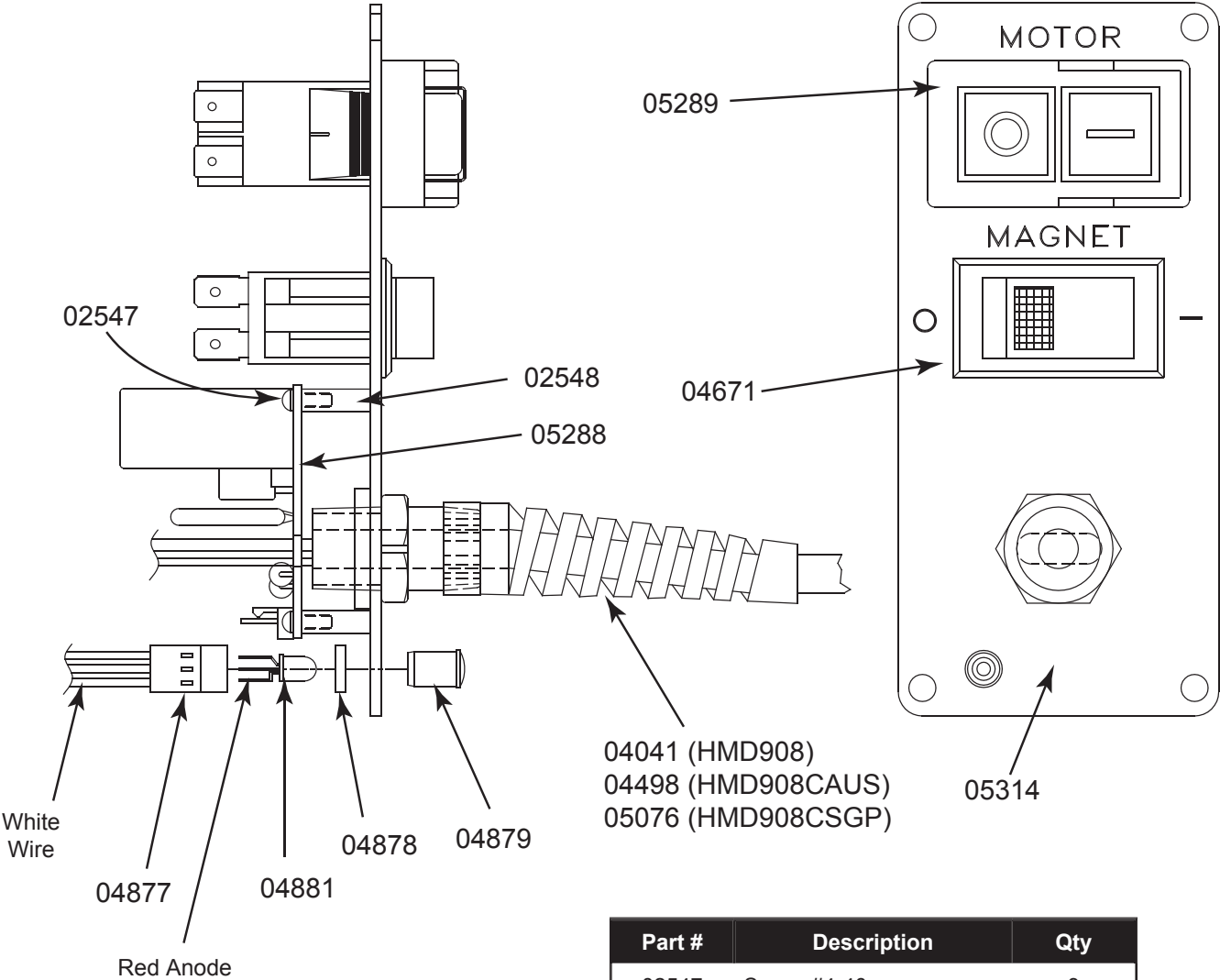
### Motor Parts List - 04499

Part #	Description	Qty	Part #	Description	Qty
02413	Motor Cord	1	17612	Dowel Pin	1
04499	Motor Assy	1	17613	Flat Washer	1
04502	Brush Cover	2	17614	Gear Housing	1
04042	Label, Motor Safety	1	17616	Spindle	1
04579	Label, Motor	1	17617	Fan Guide	1
10538	Washer #8	1	17618	Gasket	1
11053	BHS Screw #8-32	1	17621	Carbon Brush (Pair)	1
17600	Field Case	1	17622	Brush Cap	2
17601	Gear Housing	1	17623	Pan Head Screw	2
17602	Ball Bearing	2	17624	Pan Head Screw Short	2
17603	Ball Bearing	1	17625	Pan Head Screw Long	2
17604	Ball Bearing	1	17626	Retaining Ring	1
17605	Ball Bearing	1	17627	Retaining Ring	1
17606	Dust Seal	1	17629	Field	1
17607	1st Inter. Gear Assy	1	17631	Armature	1
17608	2nd Inter. Gear Assy	1	17632	Paper Washer	2
17609	Spur Gear	1	17687	Lock Washer Heli M6	4
17610	Flat Washer	1	75150	Lock Washer Heli M5	2
17611	Key	1	75289	Pan Head Screw	2

# CONTROL PANEL HOOK UP DIAGRAM



# CONTROL PANEL PARTS - All Models



Note: When inserting LED into wiring harness  
make sure red anode lines up  
with white wire

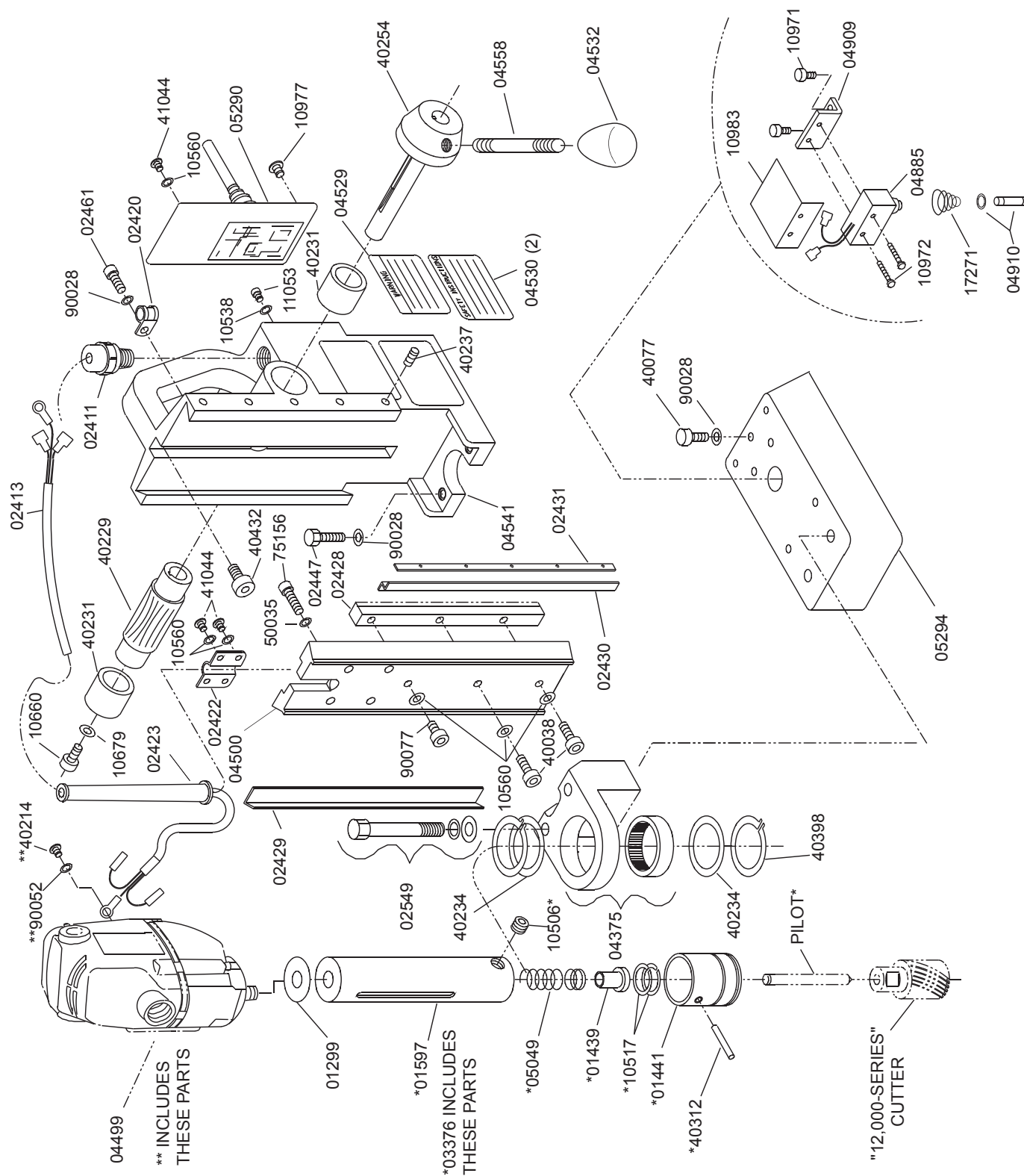
**Control Panel Complete**

HMD908: 05290  
HMD908CAUS: 05308  
HMD908CSGP: 05309

Part #	Description	Qty
02547	Screw #4-40	3
02548	Spacer	3
04041	Power Cord	1
04498	Power Cord (CAUS)	1
04671	Rocker Switch	1
04877	Wire Harness LED	1
04878	Spacer LED	1
04879	LED Lens	1
04881	LED	1
05076	Power Cord (CSGP)	1
05204*	Wire Harness Assy	1
05205*	Green Wire Harness	1
05288	Circuit Board	1
05289	On/Off Switch	1

\* Not Shown

# MODEL HMD908 EXPLODED DIAGRAM



# HMD908 DRILL PARTS LIST

Part #	Description	Qty	Part #	Description	Qty
01299	Thrust Washer	1	05294	Magnet	1
01439	SHC Screw 1/4-28	1	10506	Set Screw 3/8-24	2
01441	Ejector Collar	1	10517	Retaining Ring	2
01597	Arbor Body	1	10528	Lock Washer	1
02411	Strain Relief - Motor Cord	1	10560	Lock Washer #10 Ext	11
02413	Motor Cord Assy	1	10660	SHC Screw 1/4-20 x 5/8	1
02420	Motor Cord Clamp	1	10679	1/4 Flat washer	1
02422	Motor Cord Bracket	1	10971	SHC Screw 1/4-20 x 1/2	2
02423	Motor Cord Flex. Protector	1	10972	BHC Screw #6-32	2
02428	Rack Gear	1	10977	BHC Screw 1/4-20	1
02429	Brass Gib - Right	1	10983	Safety Switch Shield	1
02430	Brass Gib - Left	1	11053	BHC Screw #8-32	1
02431	Steel Gib	1	17271	Spring	1
02447	Bolt-Hex Head 1/4-28	2	40038	SHC Screw #10-32	2
02461	BHC Screw 1/4-20	1	40077	SHC Screw 1/4-20	1
02549	3/8" Bolt Kit	1	40214	SHC Screw #6-32	1
03376	Arbor Assy	1	40229	Feed Gear	1
03857	Screw Hex Head #4-40	16	40231	Bronze Bushing	2
04375	Front Support Bracket	1	40234	Thrust Washer	2
04499	230V Motor	1	40237	Gib Screw	5
04500	Motor Slide Mount	1	40254	Hub Assy	1
04529	Warning Tag	1	40312	Roll Pin Altered	1
04530	Safety Tag	2	40398	Retaining Ring	1
04532	Feed Handle Knob	3	40432	SHC Screw 1/4-28	1
04541	Housing Assy	1	41044	BHC Screw #10-32	6
04558	Feed Handle	3	50035	Lock Washer 1/4 Ext	4
04885	Safety Switch Assy	1	75156	SHC Screw M6 x 15mm	4
04909	Bracket Safety Switch	1	90028	Lock Washer 1/4 Heli	5
04910	Plunger Assy	1	90052	Lock Washer #6 Ext	1
05049	Arbor Spring	1	90077	BHC Screw #10-32	1
05290	Control Panel	1			



Exploded view diagram of a mechanical assembly, likely a pump or motor component. The diagram shows various parts and their assembly relationships, indicated by dashed lines and leader lines.

**Key Components and Part Numbers:**

- Motor/Actuator Assembly (Bottom Left):** Includes parts 05059, 05061, 05060, and 04499. A note states: "\*\* INCLUDES THESE PARTS".
- Shaft and Coupling Assembly (Bottom Center):** Includes parts 01299, 40302, 40301, 40300, 40295, 40300, 40301, 40302, 40332, and 02677 (SGP Only).
- Internal Mechanism (Center):** Includes parts 02423, 04500, 02422, 02429, 02430, 02431, 04541, 040038, 05058, 040038, 10560, 02549, 040398, 040234, 04375, 040234, 040398, 040234, 04375, 040234, 040398.
- Control/Interface Unit (Top Left):** Includes parts 02413, 10660, 10679, 05057, 04157, 040229, 040231, 02411, 90028, 02461, 02420, 10560, 41044, 05308 (AUS Only), 05309 (SGP Only), 10977, 11053, 10538, 40231, 04529, 40254, 04558, 04532, 10983, 10971, 04909, 04885, 10972, 17271, 04910.
- Base and Mounting (Bottom Right):** Includes parts 05294, 40077, 90028, 02431, 04541, 02430, 02429, 040038, 05058, 040038, 10560, 02549, 040398, 040234, 04375, 040234, 040398, 040234, 04375, 040234, 040398.

**Assembly Notes:**

- \*\* INCLUDES THESE PARTS
- HOOKS TO COOLANT INDUCER
- 02677 (SGP Only)

# HMD908C MODELS - PARTS LIST

Part #	Description	Qty	Part #	Description	Qty
01299	Thrust Washer	1	05308	Control Panel AUS Model	1
02411	Strain Relief - Motor Cord	1	05309	Control Panel SGP Model	1
02413	Motor Cord Assy	1	05358	Washer Shim	1
02420	Motor Cord Clamp	1	10506	Set Screw 3/8-24	2
02422	Motor Cord Bracket	1	10517	Retaining Ring	1
02423	Motor Cord Flex. Protector	1	10528	Lock Washer	1
02428	Rack Gear	1	10560	Lock Washer #10 Ext	11
02429	Brass Gib - Right	1	10660	SHC Screw 1/4-20 x 5/8	1
02430	Brass Gib - Left	1	10679	1/4 Flat washer	1
02431	Steel Gib	1	10971	SHC Screw 1/4-20 x 1/2	2
02447	Bolt-Hex Head 1/4-28	2	10972	BHC Screw #6-32	2
02461	BHC Screw 1/4-20	1	10977	BHC Screw 1/4-20	1
02549	3/8" Bolt Kit	1	10983	Safety Switch Shield	1
02677	Handle SGP Model	1	11053	BHC Screw #8-32	1
03857	Screw Hex Head #4-40	16	17271	Spring	1
04375	Front Support Bracket	1	40038	SHC Screw #10-32	2
04499	230V Motor	1	40077	SHC Screw 1/4-20	1
04500	Motor Slide Mount	1	40214	SHC Screw #6-32	1
04529	Warning Tag	1	40229	Feed Gear	1
04530	Safety Tag	2	40231	Bronze Bushing	2
04532	Feed Handle Knob	3	40234	Thrust Washer	2
04541	Housing Assy	1	40237	Gib Screw	5
04558	Feed Handle	3	40254	Hub Assy	1
04885	Safety Switch Assy	1	40295	Coolant Inducer Collar	1
04909	Bracket Safety Switch	1	40300	O-Ring	2
04910	Plunger Assy	1	40301	Washer	2
04986	Rubber Washer	1	40302	Retaining Ring	2
05050	Compression Spring	1	40303	Tube Fitting	1
05053	Arbor Body	1	40332	Coolant Inducer Assy	1
05054	Spring Seat	1	40398	Retaining Ring	1
05055	Collar	1	40432	SHC Screw 1/4-28	1
05058	Bracket for Coolant Inducer	1	41044	BHC Screw #10-32	6
05059	Holder for Coolant Bottle	1	50035	Lock Washer 1/4 Ext	4
05060	Coolant Bottle Assy	1	75156	SHC Screw M6 x 15mm	4
05061	Plastic Knob	1	90028	Lock Washer 1/4 Heli	5
05062	Arbor Assy	1	90052	Lock Washer #6 Ext	1
05294	Magnet	1	90077	BHC Screw #10-32	1

## “12,000-SERIES”

Diameter (In & mm)	Decimal Equivalent	1" - 25MM DOC PART NO.	2" - 50MM DOC PART NO.
<b>PILOTS &gt;&gt;&gt;</b>		<b>10531</b>	<b>10532</b>
7/16	.4375	12114	12214
12MM	.4724	12312	12412
<b>PILOTS &gt;&gt;</b>		<b>10533</b>	<b>10534</b>
1/2	.5000	12116	12216
9/16	.5625	12118	12218
5/8	.6250	12120	12220
11/16	.6875	12122	12222
13MM	.5118	12313	12413
14MM	.5512	12314	12414
15MM	.5906	12315	12415
16MM	.6299	12316	12416
17MM	.6693	12317	12417
18MM	.7087	12318	12418
<b>PILOTS&gt;&gt;</b>		<b>10527</b>	<b>10528</b>
19MM	.7480	12319	12419
3/4	.7500	12124	12224
20MM	.7874	12320	12420
13/16	.8125	12126	12226
21MM	.8268	12321	12421
22MM	.8661	12322	12422
7/8	.8750	12128	12228
23MM	.9055	12323	12423
15/16	.9375	12130	12230
24MM	.9449	12324	12424
25MM	.9843	12325	12425
1	1.0000	12132	12232
26MM	1.0237	12326	12426
1-1/16	1.0625	12134	12234
27MM	1.0630	12327	12427
28MM	1.1020	12328	12428
1-1/8	1.1250	12136	12236
29MM	1.1417	12329	12429
30MM	1.1812	12330	12430
1-3/16	1.1875	12138	12238
31MM	1.2205	12140	12240
1-1/4	1.2500	12140	12240
32MM	1.2598	12332	12432
33MM	1.2993	12333	12433
1-5/16	1.3125	12142	12242
34MM	1.3386	12334	12434
1-3/8	1.3750	12144	12244
35MM	1.3779	12335	12435

## HMD908 ACCESSORIES

Part No.	Description
01829	Spindle-Adapter for Jacobs Chuck
02449	Ratchet Drive
02463	Tapping Kit #6 through 1/2"
02564	Chain Mount Pipe Adapter Kit
02608	Twist Drill Adapter
03845	Twist Drill Adapter Kit Includes 5 Twist Drills with flattened shanks
05000	Portable Vac Pad
10100	1" Arbor Extender
10200	2" Arbor Extender
10732	1/2" Jacobs Chuck (Requires 01829)
12958	Counter Sink Kit
12001	Cutter Kit 1" Depth of Cut Sizes 9/16, 11/16, 13/16, 15/16, 1-1/16
12002	Cutter Kit 2" Depth of Cut Sizes 9/16, 11/16, 13/16, 15/16, 1-1/16
12003	Cutter Kit 25mm Depth Of Cut Sizes 14mm, 16mm, 18mm, 20mm, 22mm
12004	Cutter Kit 50mm Depth of Cut Sizes 14mm, 16mm, 18mm, 20mm, 22mm

## Notes