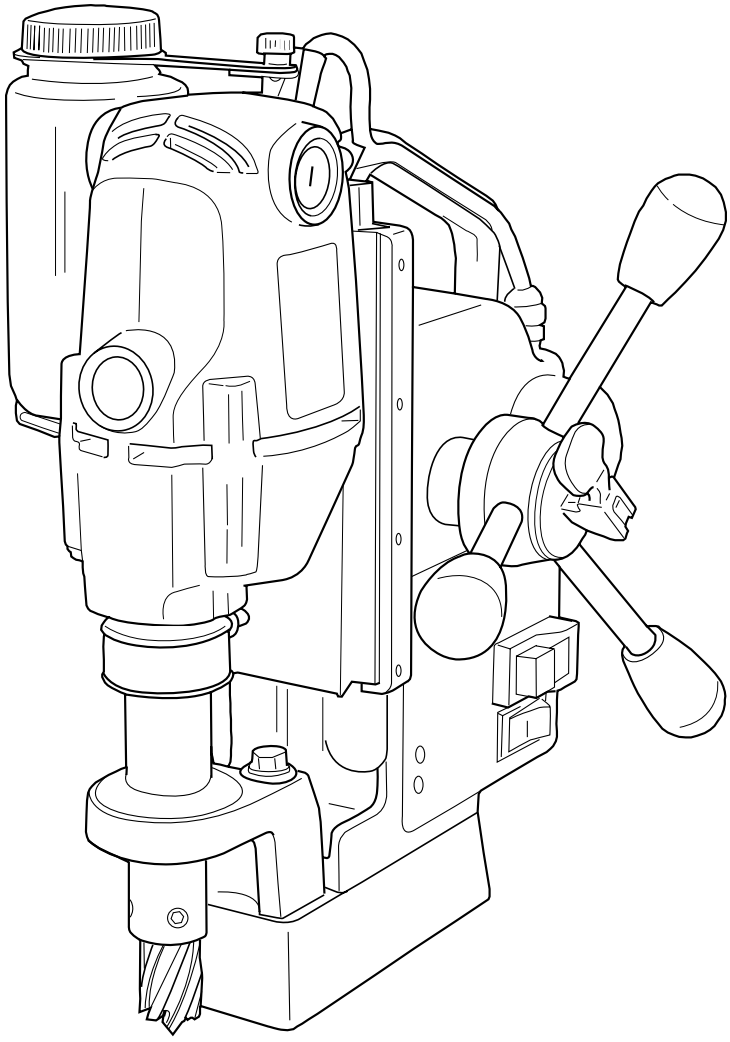
Hougen®

Solving holemaking problems through innovation™

HMD925

POWER FEED MAGNETIC DRILL

OPERATOR'S MANUAL

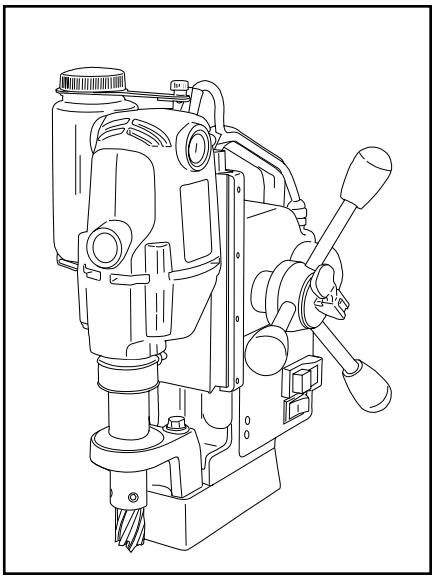


FOR USE WITH "12,000-SERIES" HOUGEN® CUTTERS

HOUGEN®

Portable Magnetic Drill

Model HMD925



Welcome to Hougen

Congratulations on your purchase of the Hougen® Portable Magnetic Drill Model HMD925. 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	7/16" - 1-1/2" Manual Mode
	7/16" - 1-1/4" Power Feed Mode
Depth of Cut	2"
Motor	450 RPM, 8A
Net Weight	37 Lbs.

Commercial / Industrial Limited Warranty

Hougen Manufacturing, Incorporated warrants its Portable Magnetic Drills and its Electro-hydraulic Hole Punchers for a period of 1 year 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 workman ship. 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.

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

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)
   90724 Safety chain
   02635 3/16" 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 (19030). Do not overtighten or may strip the knobs.
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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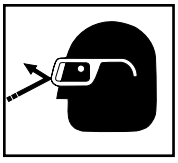
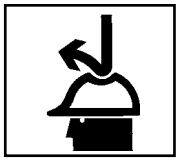
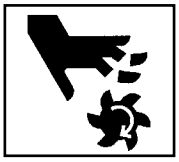
SAFETY FIRST



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.

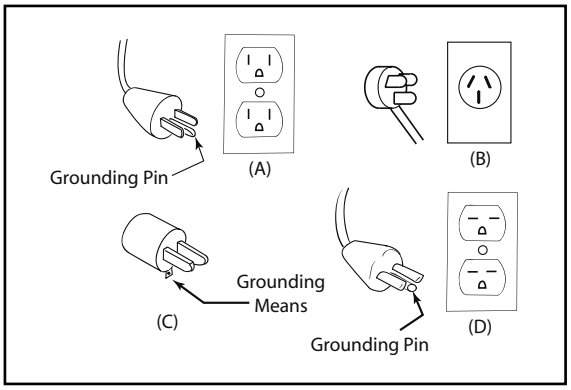
10. Store Idle Tools
When not in use, tools should be stored in a dry, and high or locked-up place — out of reach of children.

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 Hougen 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 Hougen 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.

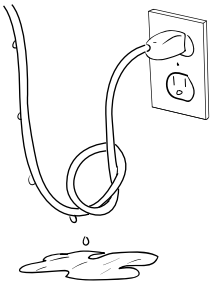
24. Additional Safety Precautions
Arbor and cutter should never be used as a hand-hold. Keep hands and clothing away from all moving parts. Do not use Hougen Cutters where ejected slug might cause injury (slug ejected at end of cut). Also, adhere to all operating instructions. Do not drill through any 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 counterclock-wise. 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 (If Applicable)
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 (If Applicable)
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 HMD925 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.

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

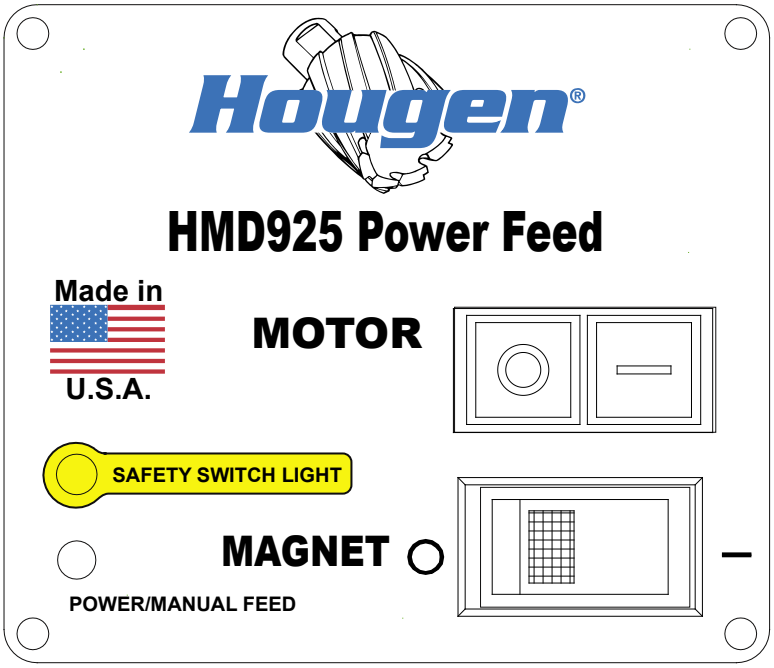
When light is Red the motor will still function, but “ON” switch becomes a momentary switch. (The switch must be held on to operate motor.)

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

OPERATION OF CONTROLS
BEFORE INSTALLING HOUGEN CUTTER

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 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).

POWER/MANUAL FEED SWITCH — Enables or disables Power Feed Mode.

1. Place Magnetic Drill on clean, flat steel plate that is at least 3/8” thick.
2. Plug unit into proper AC power source. **DO NOT use with DC Power.**
3. Locate the Magnet **ON** and **OFF switches** and the motor **STOP** and **START** switches.
4. **NOTE: A loss of power will de-energize the magnetic base and deactivate the motor.**

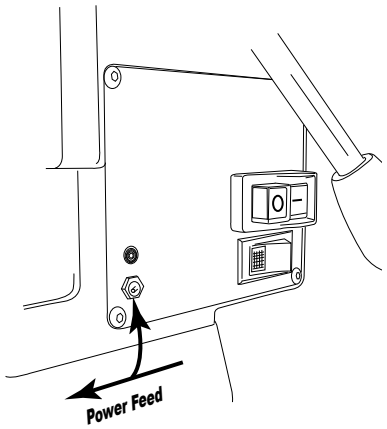
When power is restored, the magnet will reenergize, however, the motor START switch must be depressed before the motor will start.

OPERATING INSTRUCTIONS

Always remember that the magnet's holding power is directly related to the workpiece thickness and surface condition. 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 (3/8" or less) or material with uneven surfaces.

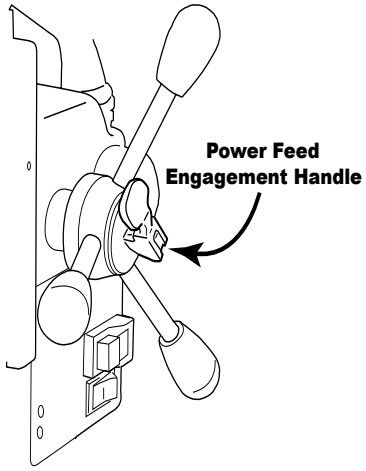
Power Feed Mode

Step 5

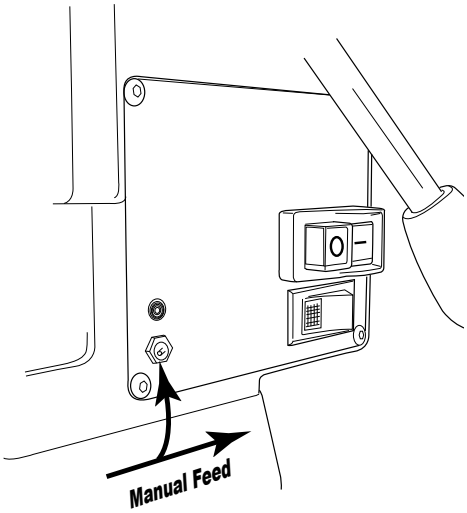


1. Make sure workpiece and bottom of magnet are free of chips, oil, etc.
2. Position drill by sliding it and gently feeding Arbor so that pilot point is touching center of hole to be drilled.
3. Secure unit to workpiece with safety chain.
4. Turn magnet ON by pressing the magnet ON switch.
5. On Control Panel Flip Power/Manual Feed Switch to **Power Feed**.
6. Turn On Cutting Fluid and check for proper flow by slightly depressing pilot on work surface.
7. Make certain that cutter is clear of workpiece by 1/16" - 1/8" and turn motor ON by pressing the motor START switch.
8. In center of feed handles **Flip Power Feed Handle** out to engage Power Feed Motor. The unit will feed itself into and through the workpiece.
9. At conclusion of cut, motor will automatically turn OFF.
   CAUTION: Slug can eject with force and distance.
   Disengage Power Feed Handle then turn Feed Handles to raise Arbor and make sure slug has 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.
13. Disconnect safety chain and you are ready to move unit to new drilling position.

Step 8



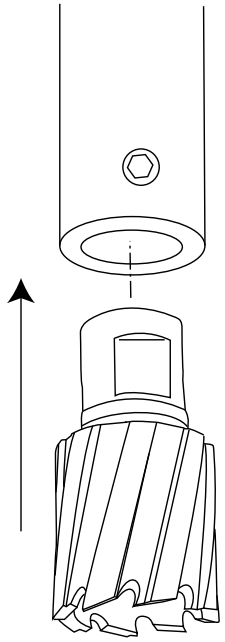
Manual Feed Mode



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. On Control Panel Flip Power/Manual Feed Switch to **Manual**.
5. Turn magnet ON by pressing the magnet ON switch.
6. Turn Feed Handle, raising the cutter until the pilot is above the work surface.
7. Turn on coolant bottle.
8. Make certain that cutter is clear of workpiece and turn motor ON by pressing the motor START switch.
9. Feed Cutter slowly into workpiece. Only after cutting path is established to a depth of about 1/16" can full force be applied to feed handles.
10. Ease up on feed pressure as cutter starts breaking through.
11. At conclusion of cut, turn motor OFF by pressing motor STOP switch.
    CAUTION: Slug can eject with force and distance.
    Turn Feed Handles to raise Arbor checking to make sure the slug has fallen free.
12. Turn magnet OFF by pressing the magnet OFF switch.
13. **Disconnect from power source.**
14. 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.

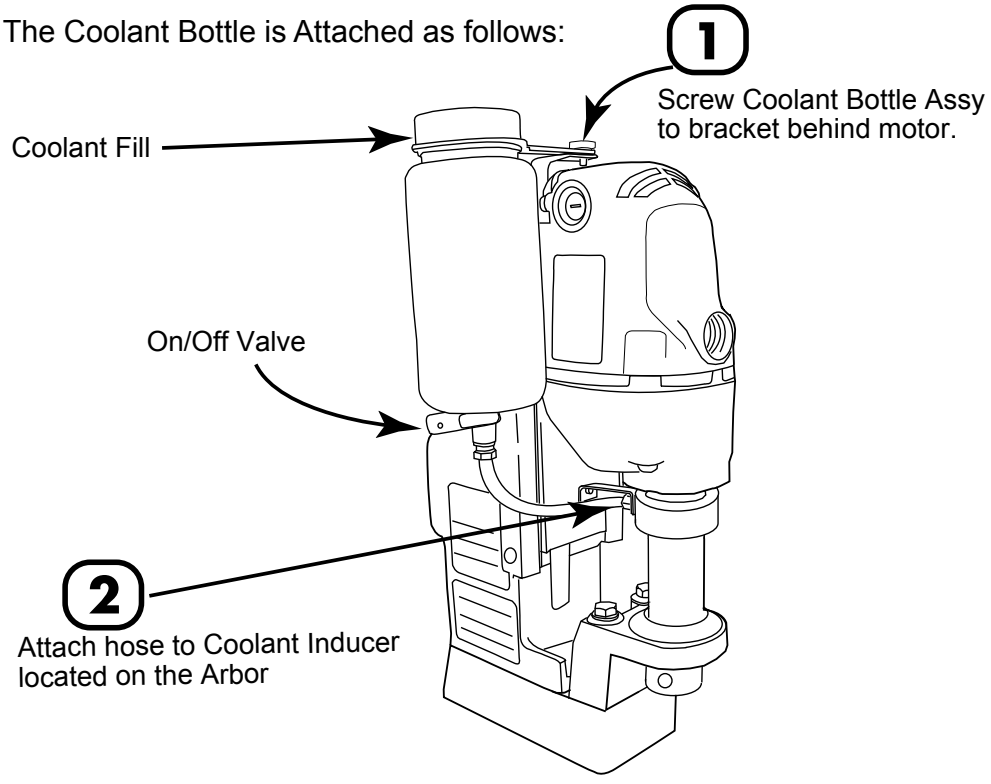
INSTALLING HOUGEN CUTTER IN ARBOR

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 Hougen Cutter.
5. Insert Hougen 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.

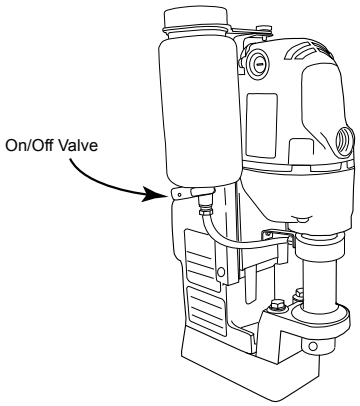


INSTALLATION OF COOLANT BOTTLE

The Coolant Bottle is Attached as follows:



OPERATION OF CUTTING FLUID RESERVOIR



1. With Drill in operating position, turn the feed handles so that cutter and pilot are above the work surface.
2. Fill reservoir by removing cap on bottle.
3. **Turn on coolant bottle.**
4. 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 a groove in the pilot.
5. Fluid output can be adjusted by position of On/Off Valve.

ADJUSTMENT OF GIBS

1. Loosen all Gib Screws.
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.
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.***

ARBOR & FRONT SUPPORT BRACKET REMOVAL AND INSTALLATION

Removal

1. Remove coolant bottle. (see previous page)
2. Loosen arbor support bracket bolts.
3. Loosen set screws holding arbor on motor output shaft.
4. Remove arbor.

Installation

1. Hand tighten front support bracket bolts. Do not tighten all the way.
2. Slide arbor to full up position and hold arbor in position over hex drive motor output shaft.
3. Tighten two set screw to hold arbor onto motor output shaft.
4. Turn feed handle until motor and arbor are at the bottom of their travel. Tighten arbor support bracket bolts to 400 in/lbs
5. Install coolant bottle. (see installation previous page)
6. Run motor for 10 seconds. (If visual movement of arbor is noticed, restart at step 1)
7. Re-check for tightness of arbor set screws.

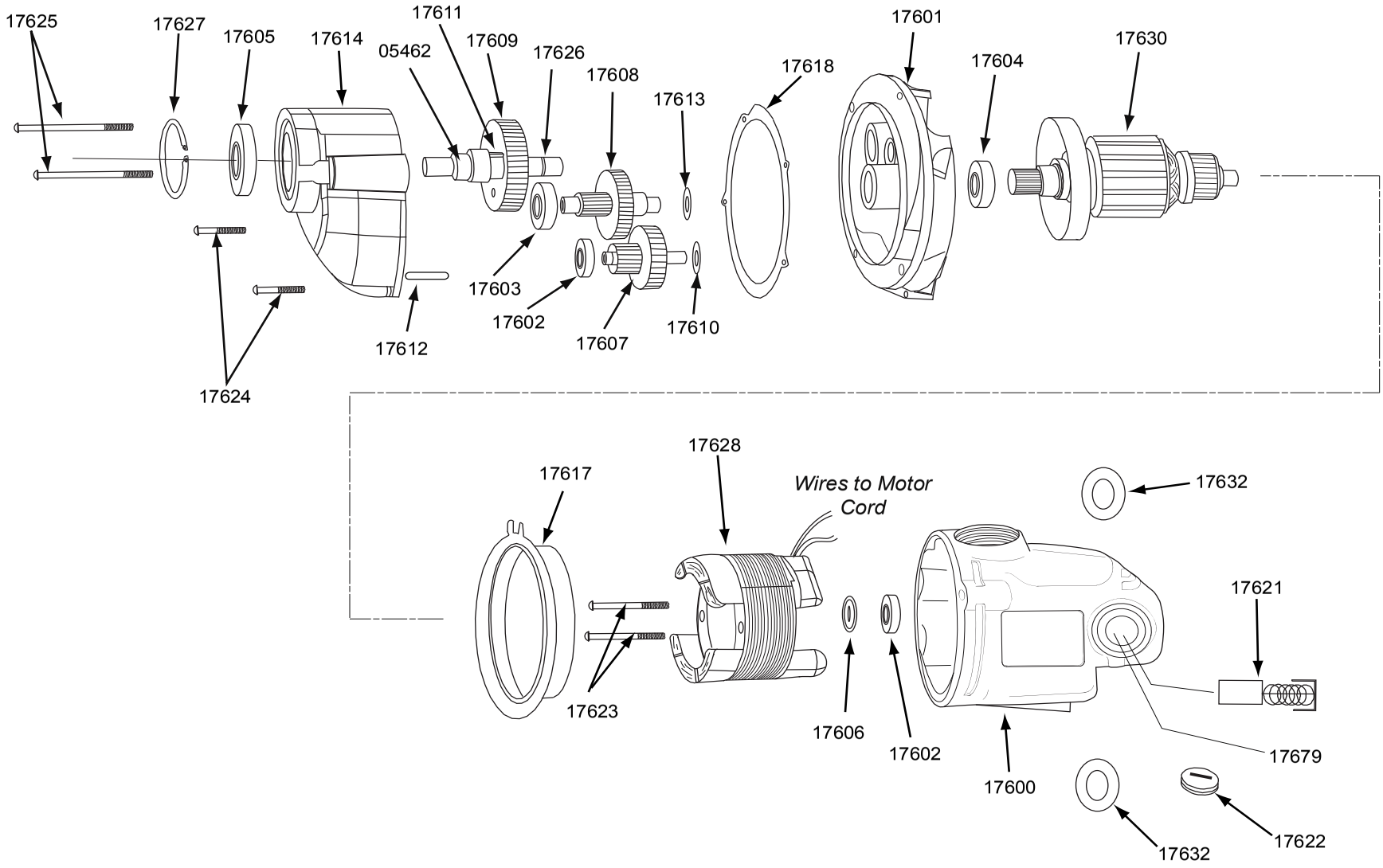
ARBOR ADJUSTMENT

Adjust Gibs before adjusting front support bracket.

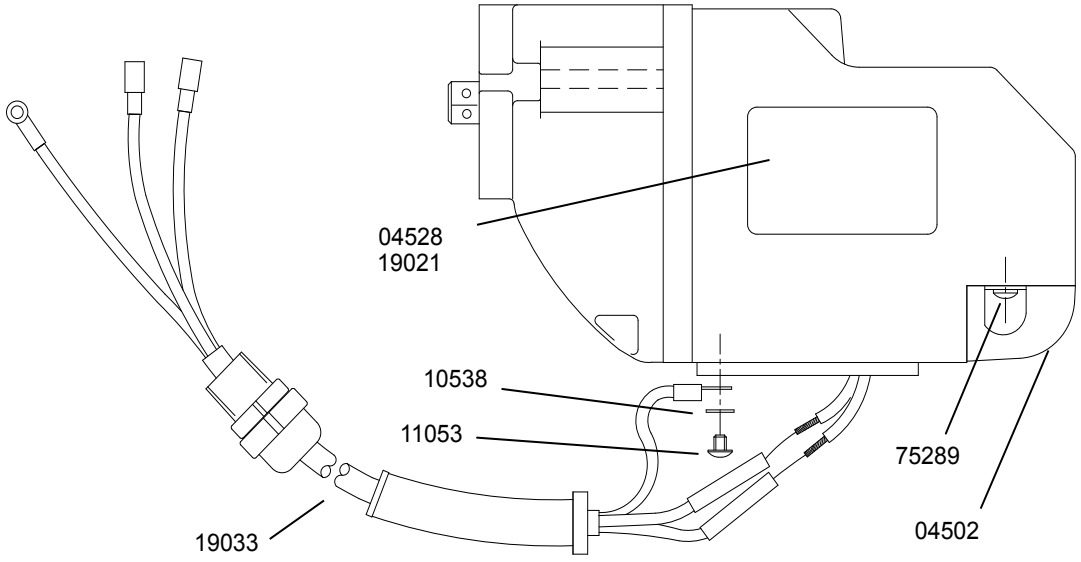
1. Loosen Arbor Support Bracket Bolts.
2. Be sure top of arbor is flush with the shoulder on motor output shaft. Also make certain arbor is securely fastened.
3. Turn feed handle until motor and spindle are at the bottom of their travel.
4. Tighten Arbor Support Bolts.
5. Feed slide up and down a few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

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

MOTOR PARTS DIAGRAM



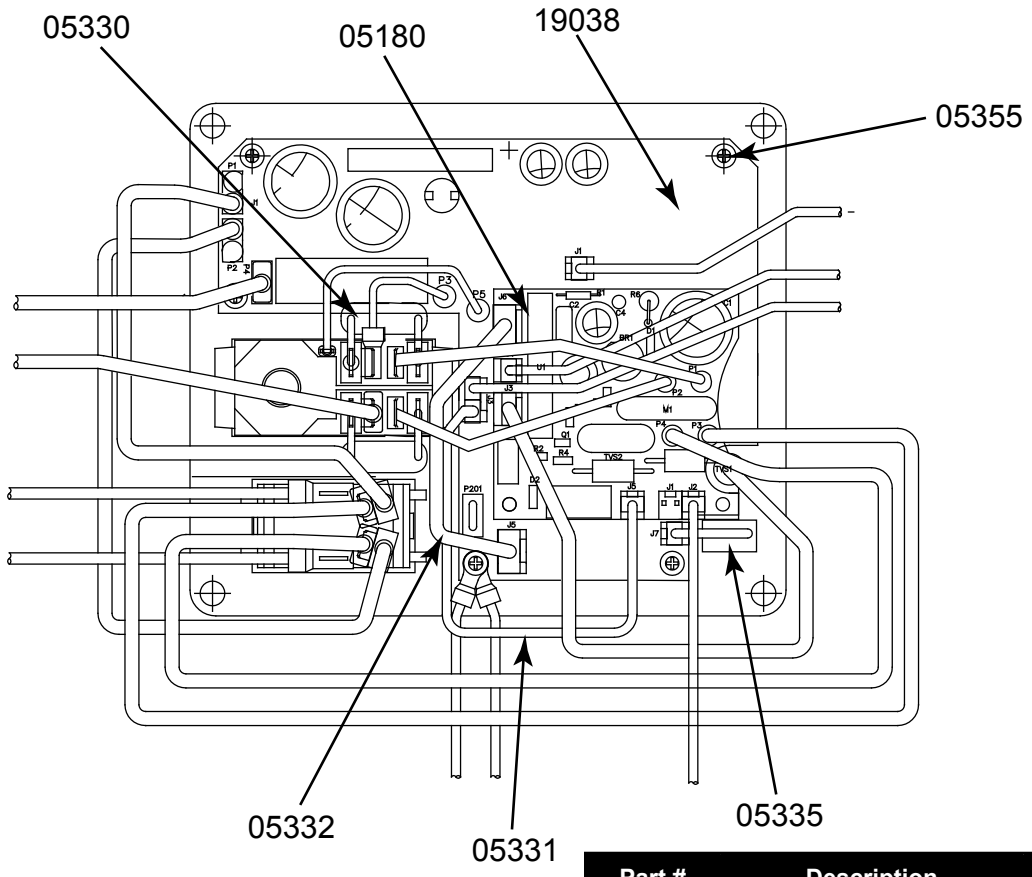
05479 MOTOR ASSEMBLY

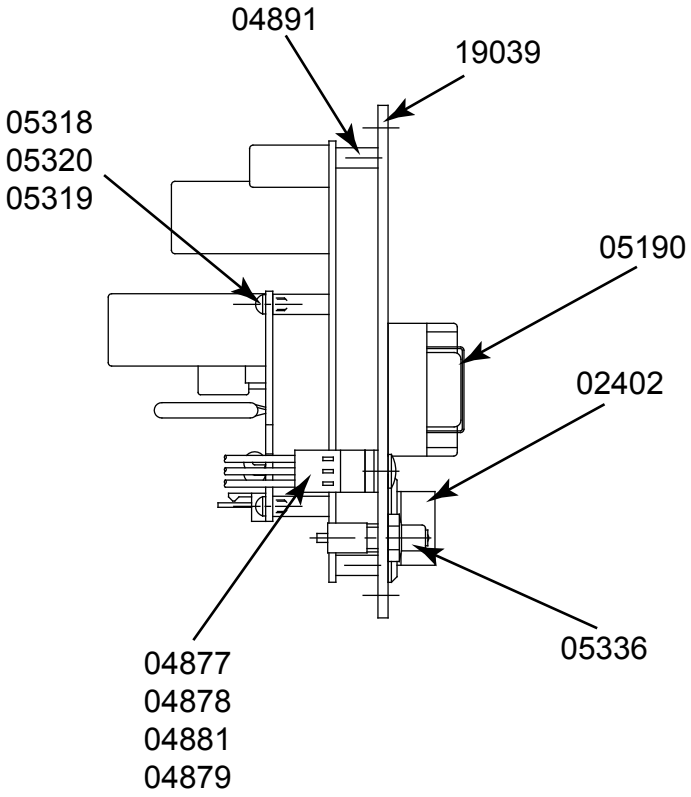


MOTOR PARTS LIST

Part #	Description	Qty	Part #	Description	Qty
04502	Brush Cover	1	17613	Flat Washer	1
04528	Label, Motor Safety	1	17614	Gear Housing	1
05462	Spindle	1	17617	Fan Guide	1
10538	Washer #8	1	17618	Gasket	1
11053	Scew BHS #8-32		17630	Armature	1
17600	Field Case	1	17628	Field	1
17601	Gear Housing	1	17621	Carbon Brush (Pack of 2)	1
17602	Ball Bearing	2	17622	Brush Cap	2
17603	Ball Bearing	1	17623	Pan Head Screw	2
17604	Ball Bearing	1	17624	Pan Head Screw Short	2
17605	Ball Bearing	1	17625	Pan Head Screw Long	2
17606	Dust Seal	1	17626	Retaining Ring	1
17607	1st Inter. Gear Assy	1	17627	Retaining Ring	1
17608	2nd Inter. Gear Assy	1	17632	Paper Washer	2
17609	Spur Gear	1	17679	Brush Holder	2
17610	Flat Washer	1	19021	Label, Motor	1
17611	Key	1	19033	Motor Cord	1
17612	Dowel Pin	1	75289	Pan Head Screw	2

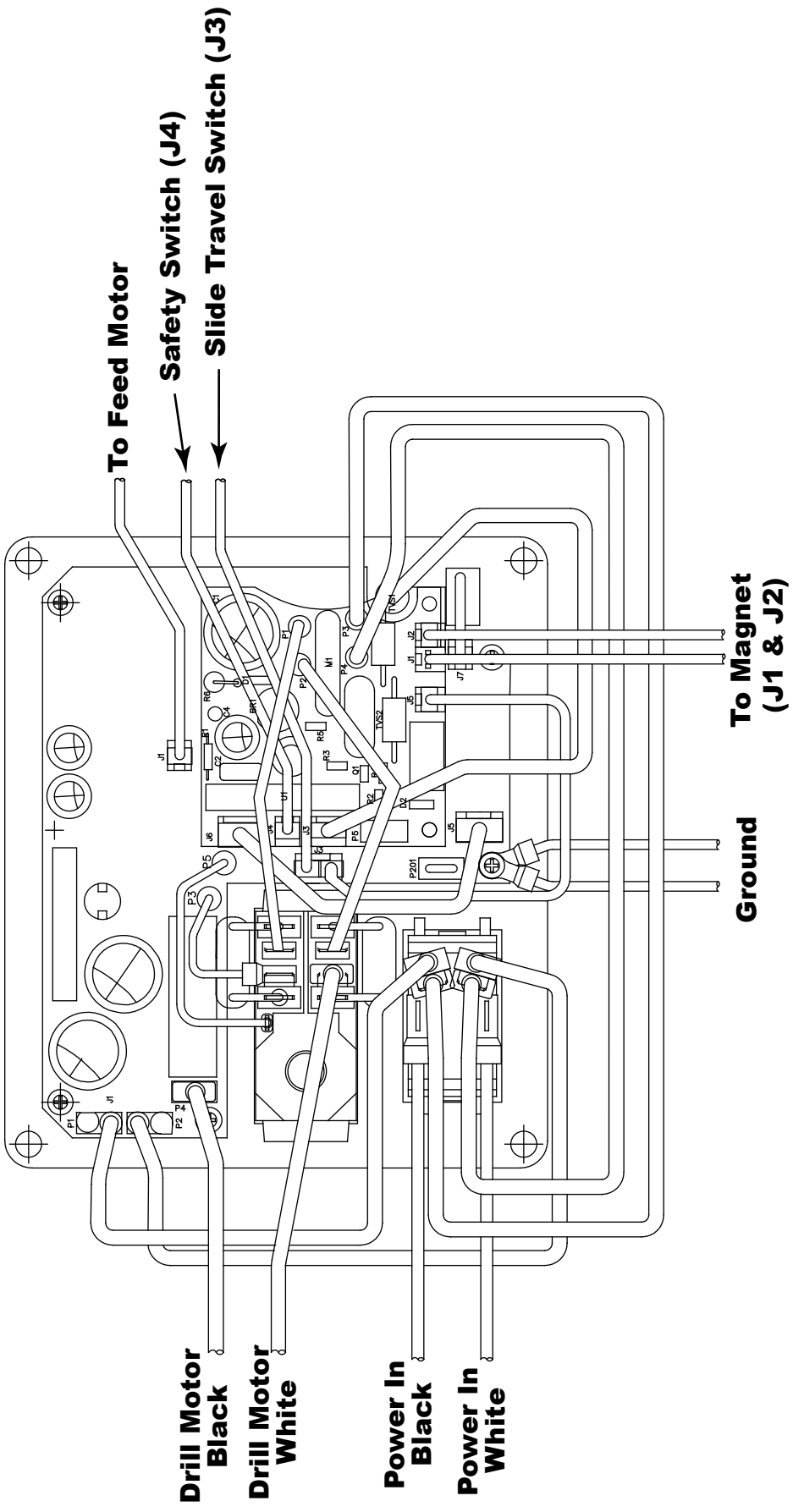
CONTROL PANEL PARTS LIST
Panel Assembly P/N: 19037

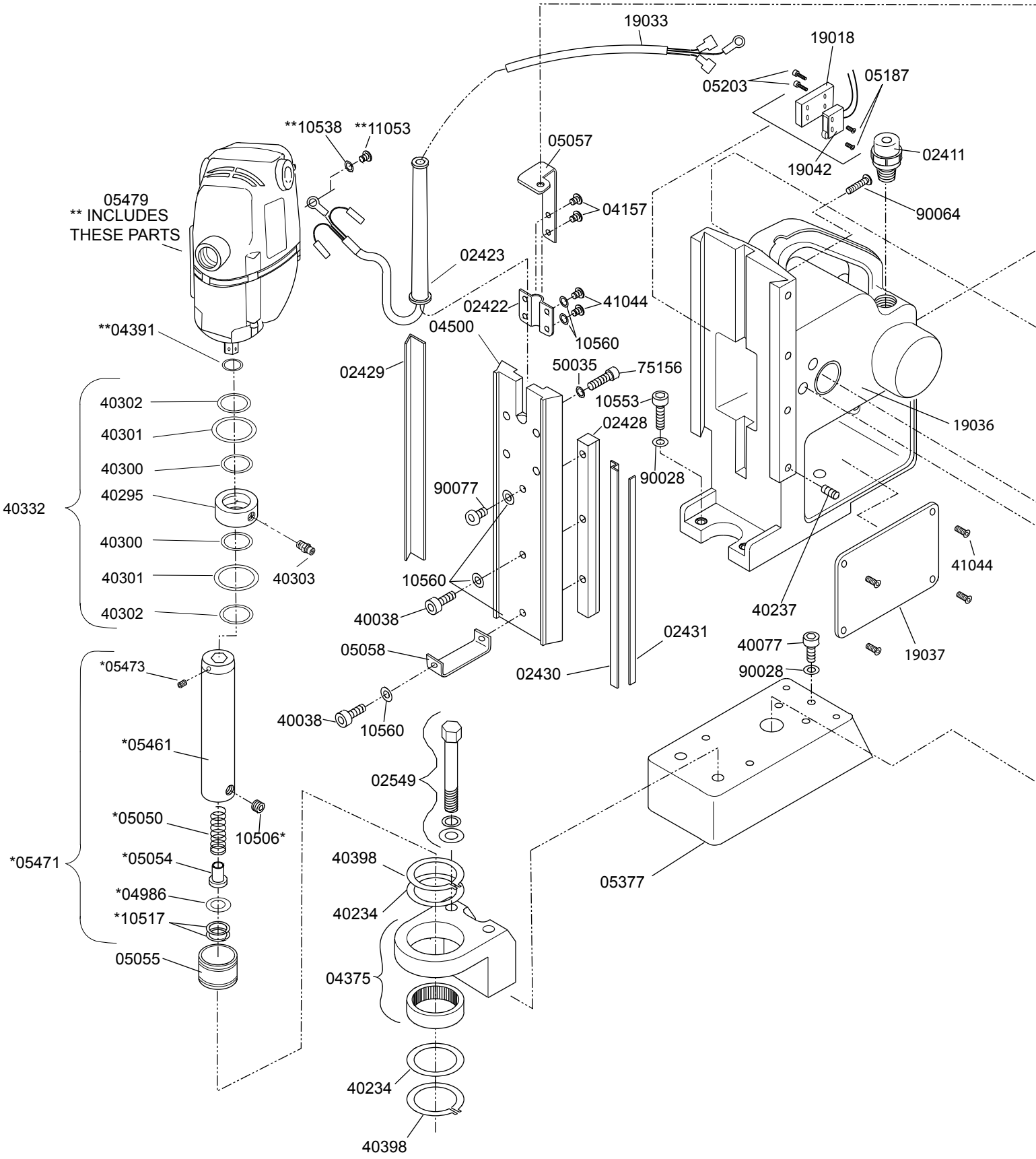




Part #	Description	Qty
02402	Rocker Switch	1
04877	Wire Harness	1
04878	LED Spacer	1
04879	LED Lens	1
04881	LED Bulb	1
04891	Stand Off	5
05180	Power Circuit board	1
05190	Switch w/ Relay	1
05318	Standoff	3
05319	Nut	3
05320	Screw	3
05330	Suppression Assy	1
05331	Two Wire Jumper	1
05332	Jumper	1
05335	Mini Toggle Switch	1
05336	Mini Boot Toggle Switch	1
05355	Screw PHMS #4-40	5
19038	Power Feed Circuit Board	1
19039	Faceplate	1

CONTROL PANEL HOOKUP




19033
19018
05187
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19042
02411
90064
**10538
**11053
05057
04157
05479
** INCLUDES
THESE PARTS
02423
02422
41044
10560
**04391
04500
02429
50035
75156
10553
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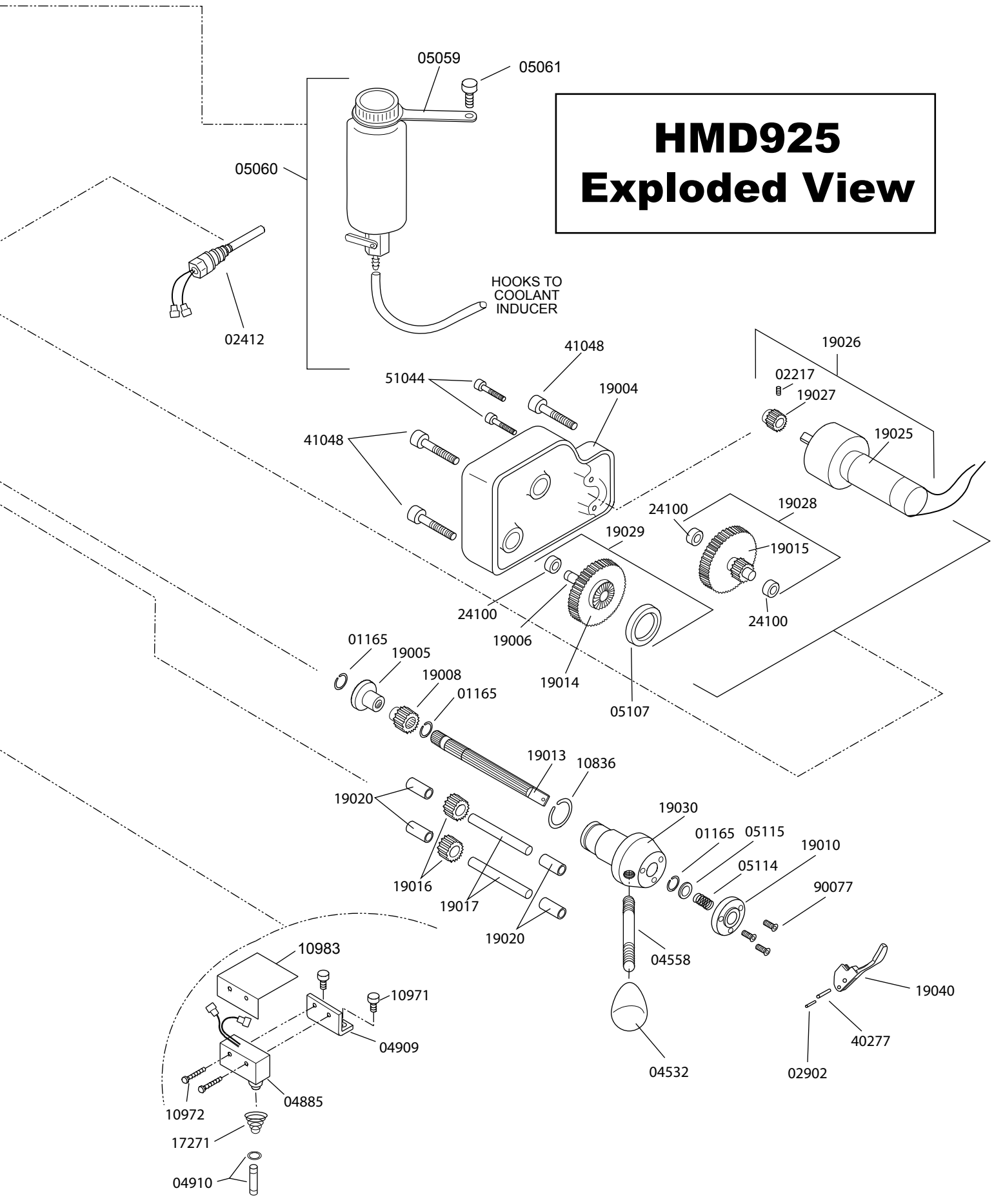
HMD925 Exploded View



HMD925 PARTS LIST

Part #	Description	Qty	Part #	Description	Qty
01165	Retaining Ring	3	05471	Arbor Assy	1
02217	SCR-SOC #8-32	1	05473	Set Screw	2
02411	Strain Relief-Motor Cord	1	05479	Motor Assy	1
02412	Power Cord	1	10506	SCR-Set 3/8-24	2
02422	Bracket-Motor Cord	1	10517	Retaining Ring	2
02423	Motor Cord Protector	1	10538	Washer #8	1
02428	Rack Gear	1	10553	SCR-SHC 1/4-20	2
02429	Gib-Brass Right	1	10560	Washer	6
02430	Gib-Brass Left	1	10836	Retaining Ring	1
02431	Gib-Steel	1	10971	SCR-SHC 1/4-20	2
02549	Bolt Assy	2	10972	SCR-BHC #6-32	2
02902	Roll Pin	1	10983	Shield	1
04157	SCR-FHSC	2	11053	Screw BHS #8-32	1
04375	Front Support Bracket Assy	1	17271	Spring	1
04391	O-Ring for Hex Spindle	1	19004	Gear Box Cap	1
04500	Slide	1	19005	Drive Clutch	1
04532	Knob	3	19006	Shaft Drive Clutch	1
04558	Feed Handle	3	19008	Gear	1
04885	Safety Switch	1	19010	Hub Plate	1
04909	Bracket- Safety Switch	1	19013	Spline Shaft	1
04910	Plunger	1	19014	Gear	1
04986	Rubber Washer	1	19015	Gear & Shaft	1
05050	Spring	1	19016	Gear	2
05054	Spring Seat	1	19017	Shaft	2
05055	Collar	1	19018	Switch	1
05057	Bracket-Coolant Bottle	1	19020	Spacer	4
05058	Bracket-Coolant Inducer	1	19025	Feed Motor	1
05059	Holder For Coolant Bottle	1	19026	Feed Motor Assy	1
05060	Coolant Bottle	1	19027	Gear	1
05061	Knob	1	19028	Gear Assy #1	1
05107	Bearing	1	19029	Gear & Clutch Assy	1
05114	Spring	1	19030	Feed Hub	1
05115	Washer	1	19033	Motor Cord	1
05187	Screw SHCS #2-56	2	19036	Housing	1
05203	SCR-SHC #8-32	2	19037	Control Panel	1
05377	Magnet	1	19040	Handle	1
05461	Arbor Body	1	19042	Switch, Slide Travel	1

HMD925 PARTS LIST CONT.

Part #	Description	Qty
24100	Bearing	3
40038	SCR-SHC #10-32	2
40077	SCR-SHC 1/4-20	1
40234	Thrust Washer	2
40237	SCR-SS 1/4-28	4
40277	Roll Pin	1
40295	Inducer	1
40300	O-Ring	2
40301	Washer	2
40302	Retaining Ring	2
40303	Tube Fitting	1
40332	Inducer Assy	1
40398	Retaining Ring	2
41044	SCR-BHC #10-32	6
41048	SCR-SHC #10-32	4
50035	Lock Washer	1
51044	SCR-SHC #10-32	2
75156	SCR-SHC 6mm	1
90028	Lock Washer	3
90064	SCR-BHC 1/4-28	1
90077	SCR-BHC #10-32	4

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.

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.
   c. Cause: Dull cutter.
   Remedy: Use a sharp cutter. A dull cutter will cause lift of magnet.

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.
   d. Cause: Misaligned or loose arbor set screws.
   Remedy: Tighten set screws.

3. Trouble: Out of round holes.
   a. Cause: Worn arbor support bracket bearing and or collar.
   Remedy: Replace: (only a few thousandths wear permissible.)
   b. Cause: Misaligned support bracket.
   Remedy: Realign support bracket.
   c. Cause: Misaligned or loose arbor set screws.
   Remedy: Tighten set screws.

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 pinion and/or rack.
   Remedy: Replace worn parts.

6. Trouble: Motor doesn't run when motor START switch 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: Safety switch broken.
   Remedy: Replace safety switch.
   d. Cause: No power.
   Remedy: Check power source and extension cords.
   e. Cause: Worn motor brushes
   Remedy: Replace brushes
   f. Cause: Faulty motor START switch
   Remedy: Return unit to an authorized repair center to have switch replaced.

7. Trouble: Feed Motor doesn't feed Arbor.
   a. Cause: Feed engagement not turn on
   Remedy: Pull Feed Engagement ON.
   b. Cause: Power/Manual Feed not flipped to Power Feed.
   Remedy: Flip switch to Power Feed.

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.

HINTS FOR SMOOTHER OPERATION

1. Keep inside of Hougen Cutter clear of chips. Chips will interfere with cutting to maximum depth and may impede the free oil flow 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 Cutting Fluid - Part No. 11742-4)
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, turn off motor and 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.)
11. **In power feed mode. A dull cutter will cause lift of the magnet be sure to always use a sharp cutter.**

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

*** ”Babying” the cutter through the cut will only decrease tool life.**

HOUGEN AUTHORIZED WARRANTY REPAIR CENTERS

ACC Machinery Co Inc.
747 Grand Avenue
Phoenix AZ 85007
602-258-7330

Fastenal Services Co.
3430 S. Willow Ave.
Fresno CA 93725
559-264-6820

Kenbil Service Center
2900 Adams St #B-14
Riverside CA 92504
951-689-6633

Caltool Industrial
470 Hester Street
San Leandro CA 94577
510-729-0600

Aviation Industrial Supply
3900 Ulster Street
Denver CO 80207
303-355-2391

Jossam Tool Repair
411 Burnham Street
East Hartford CT 06108
860-290-9044

Colony Hardware Supply
15 Stiles Street
New Haven CT 06512
203-466-5252

Fastenal Services Co.
6445 Fulton
Atlanta GA 30336
404-346-4520

Idaho Tool & Equip
452 Caldwell
Nampa ID 83651
208-465-7533

Fastenal Services Co.
5851 Guion road
Indianapolis IN 46254
317-280-2502

Fastenal Services Co.
9911 Woodend Road
Edwardsville KS 66111
913-422-8221

Allied Sales & Service
1508 River Oaks Rd West
Jefferson LA 70123
504-734-9566

N.H. Bragg & Sons
90 Perry Road
Bangor ME 04401
207-947-8611

Hougen Manufacturing
3001 Hougen Drive
Swartz Creek MI 48473
810-635-7111

Westbrook Engineering
23501 Mound Road
Warren MI 48091
586-759-3100

Oxygen Service Repair
1111 Pierce Butler Rte.
St. Paul MN 55104
651-644-7273

Fastenal Services Co.
4730 N. Service Drive
Winona MN 55987
507-453-8280

Ceekay Repair Center
5835 Manchester Ave
St. Louis MO 63110
314-644-3500

Mid-South Welding Supply
505 51st. Ave
Meridian MS 39307
601-483-9331

Fastenal Services Co.
4110 Premier Dr. #102
High Point NC 27265
336-841-6555

A&A Industrial Supplies Inc.
251 Meacham Ave
Elmont NY 11003
516-437-0114

Awisco NY Corp.
55-16 43rd. Ave
Maspeth NY 11378
718-786-7788

Hanes Supply Repair Cntr.
10 Cairn Street
Rochester NY 14611
716-826-2636

Ace Tool Repair
2201 Wantagh Ave.
Wantagh NY 11793
516-783-8899

Awisco NY Corp.
20c Gleam Street
West Babylon NY 11704
631-643-1308

Cincinnati Electrical Repair
2023 Elm Street
Cincinnati OH 45210
513-621-2183

Pennsylvania Tool Sales
625 Bev Road
Youngstown OH 44512
330-758-0845

Wilbanks Repair Center
5532 S. 94th East Ave
Tulsa OK 74145
918-627-8445

Quimby Welding Repair
1603 Northwest 14th Ave
Portland OR 97209
503-221-1100

Fastenal Services Co.
1225 Mid Valley Drive
Jessup PA 18434
570-307-6555

Boyer Machinery
2280 Wyandotte Road
Willow Grove PA 19090
215-657-2242

Weld Tooling Corp.
3001 W. Carson St.
Pittsburg PA 15204
412-331-1776

Stricklands Tool & Repair
1906 Parliament
Cayce SC 29033
800-867-1830

Gardner Southeast Repair
807 Meroney Street
Chattanooga TN 37405
423-756-4722

Fastenal Services Co.
1432 Macarthur Drive
Carrolton TX 75007
972-446-4389

Arcmaster Repair Center
301 Woodrow Ave.
Fort Worth TX 76105
817-531-8101

Power Tool Service
3718 Polk Street
Houston TX 77003
713-228-0100

ATS Repair Center
2780 West Directors Row
Salt Lake City UT 84104
801-972-3182

Arcet Equipment Co.
3416 Odd Fellows Road
Lynchburg VA 24501
434-847-1234

Pro Tool Repair
2238 James
Bellingham WA 95225
360-733-7343

American Equip Services
22418 72nd. Ave. South
Kent WA 98032
253-395-9947

Fastenal Services Co.
9725 47th. Ave SW
Lakewood WA 98489
253-983-0015

Universal Repair
1611 Boylston
Seattle WA 98122
206-322-2726

CANADA

Celtic Ind. Tool & Repair
5736-103 A Street
Edmonton Alberta
Canada T6H 3J5
780-431-0970

Power Tool Clinic
#105 19835-56 Ave.
Langley British Columbia
Canada V3A 3Y1
604-530-3550

Anchor Products
1810 Dublin Ave
Winnipeg Manitoba
Canada R3H 0H3
204-633-0064

Hougen Canada, Inc.
309 Nash Road North
Hamilton Ontario
Canada L8H 7P4
905-573-9088

Outiltech Orleans, Inc.
4975 Rue Rideau Local 180
Quebec City Quebec
Canada G2E 5H5
418-877-7776

Hougen®
Solving holemaking problems through innovation™

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