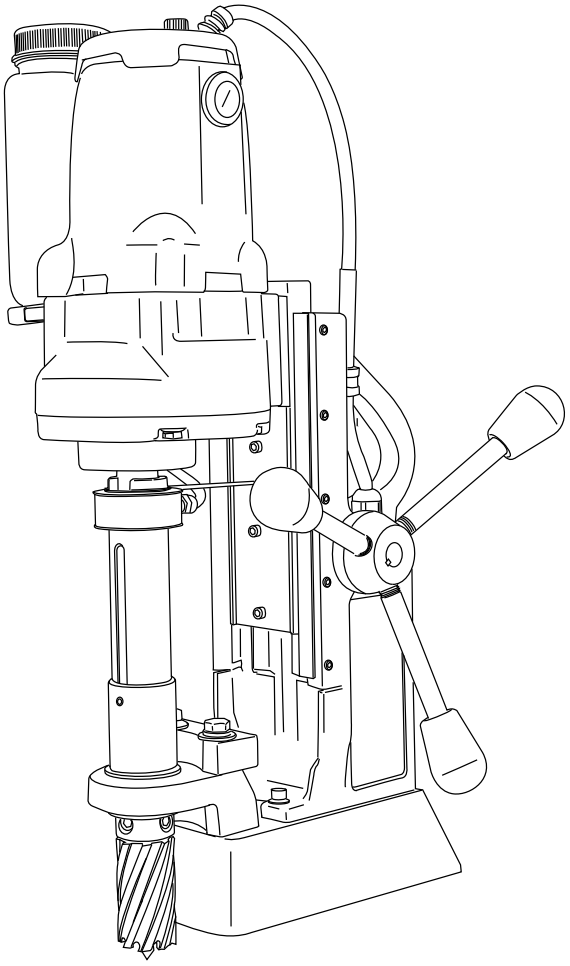
Hougen®

Solving holemaking problems through innovation™

HMD914 SERIES
PORTABLE MAGNETIC DRILLS

COVERS DRILL PART NUMBER 0914102



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

HOUGEN®

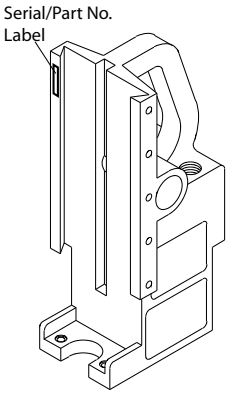
Portable Magnetic Drills
Models HMD914

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.

The HMD914 is offered in many versions. Refer to the Serial/Part number Label on your housing to direct you to the correct breakdown.



Specifications

Cutter Type.....Hougen "12,000-Series"
Hole Capacity.....7/16" to 2-1/16" (12 mm - 52 mm)
Depth of Cut.....3" (76 mm)
Motor .....115v, 11.2 A, 350 RPM
Electrical System .....115v, 50/60 Hz, 12.2A, 1403 W
Net Weight.....Standard Base 42 lbs. (19.05 Kg)

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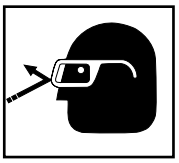
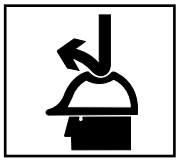
SAFETY FIRST



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: **Read and understand all instructions.** Failure to follow all instructions listed below, may result in electrical shock, fire and/or serious personal injury.

Work Area

Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.

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.

Keep bystanders, children, and visitors away while operating a power tool. Distractions can cause you to loose control.

Electrical Safety

Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordianaces. Never remove the ground prong or modify the plug in any way. Do not us any adapter 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 breakdown, grounding is provides a low resistance path to carry electricity away from the user.

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.

Don't expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

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 eletric shock.

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 electrical shock.

Personal Safety

Stay alert, watch what you are doing and use common sense when using 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.

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.

Avoid accidental starting. Be sure switchis off before plugging in. Carrying tools with your finger on the switch or plugging in tools that have the switch on invites accidents.

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.

Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.

Use safety equipment. Always wear eye production. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

Always use safety chain. Mounting can release.

Tool Use and Care

Use clamps or other practical way to secure and support the work piece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.

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.

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.

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.

Store idle tools out of reach of childern and other untrained persons. Tools are dangerous in the hands of untrained users.

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.

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.

Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool, may become hazardous when used on another tool.

Service

Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.

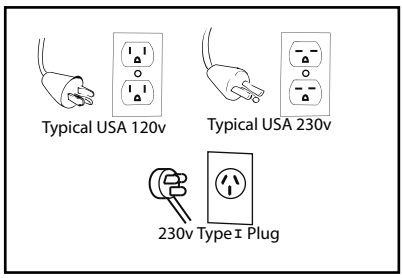
When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow Maitenance Instructions may create a risk of electric shock or injury.

Important Safety Instructions - Continued

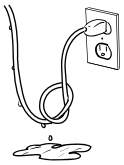
WARNING: **Read and understand all instructions.** Failure to follow all instructions listed below, may result in electrical shock, fire and/or serious personal injury.

Safe Electrical Connection
Your Mag Drill is rated for use on 115VAC or 230V at 50-60Hz. Do not attempt to use drill on power sources rated other than this.

Plugs and Receptacles



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.



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.

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

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

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.
product warranty.

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.

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

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.

Save these Instructions.

SAFETY SWITCH INDICATOR LIGHT

The Safety Switch Indicator Light is a Standard Safety Feature on HMD914 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.

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

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

Unpacking Your New Portable 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" Allen Wrench for Gib Adjustment
   10569 Feed handles (3)
   04532 Feed handle knobs (3)
   10727 3/16" Allen Wrench for reversing feed handle.
   10730 Safety Chain
   10779 7/32" Allen Wrench for cutter installation
   13013 5/32" Allen Wrench for arbor installation
5. Using the handle of the 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) onto the three feed handles (10569) and then screw the handles into the hub. Do not overtighten.
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.

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 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.

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

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 work-piece should be used when cutting thin material (3/8" or less) or material with uneven surfaces.

Note: Always form a loose knot in the power cord close to the molded plug. This prevents cutting fluid from running down the cord and into the power receptacle. (Refer to the diagram within the Safety Instructions in this manual)

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

Special Instructions for horizontal or Overhead Operation

1. **Always Use Safety Chain.**
2. Use grease or animal-fat base solid lubricant applied liberally to cutter.
3. For horizontal use, apply cutting fluid to external parts of cutter with plastic bottle or oiling can.

#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

Arbor Adjustment

1. Loosen all Gib Screws (40237)
2. Feed the drill up & down 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 (See Parts Breakdown for location)
3. Feed the drill up and down 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 in and out smoothly with no wobble or shaking. (looseness will cause cutter breakage)

Installing the HOUGEN Cutter

1. Disconnect power source.

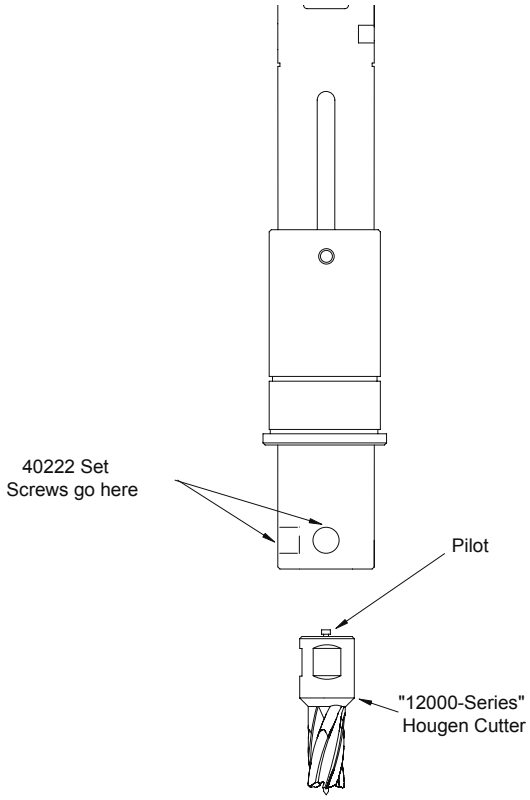
2. Lay drill on its side with feed wheel up to be sure arbor clears table if unit is in normal operating position.

3. Turn feed handles until cutter mounting set screws are exposed and then completely remove the set screws.

4. Insert proper pilot into shank end of the cutter.

5. Insert the Cutter until flats on cutter shank are aligned with set screw holes and is exactly perpendicular to the axis of set screw hole.

6. Insert Set Screws and tighten.



Drill Maintenance

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

1. At intervals of 500 holes or 10 hours of actual running time, check all fasteners for tightness and retighten if necessary. This is especially important for fasteners required for smooth, efficient cutting action. These include: Gib screws and nuts, motor hold down screws, skid plate screws, bracket mounting screws and nuts, housing bolts, clamp screw and front support bracket bolts.

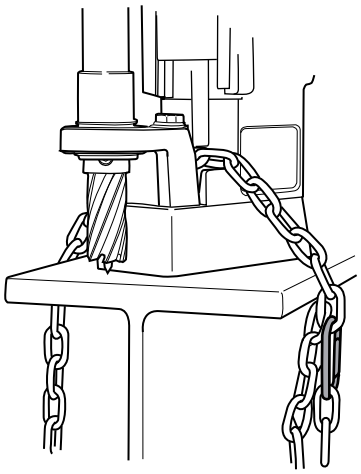
2. Coolant bottle must be attached to inducer under pressure with shut-off valve open to lubricate inducer o-rings whenever motor, is running.

3. Apply grease to slide dovetails, brass gibs, and the feed gear rack. (For best results, use Shell Cyprina-RA or equivalent.)

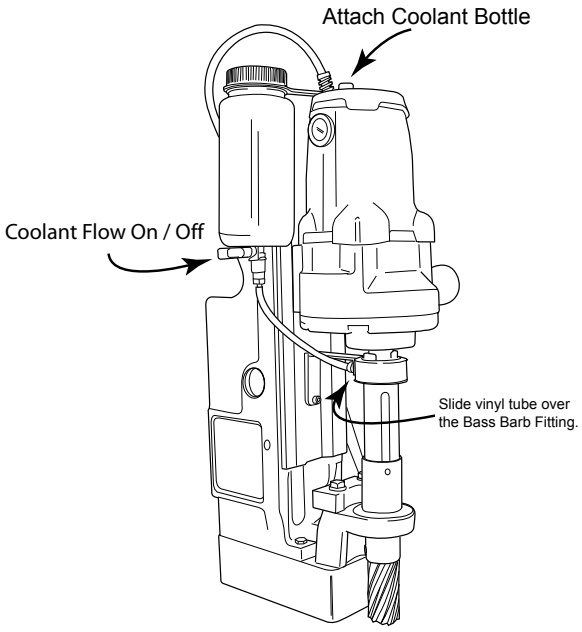
4. Remove front support bracket from arbor and pack bearing with grease. (Shell Cyprina-RA or equivalent)

SAFETY CHAIN USE

The safety chain should be used to prevent the drill unit from falling in the event of a power failure or if the magnet breaks loose from the work surface. The safety chain should be attached to the drill by running it between the Front Support Bracket and the Drll Housing and then continue around the material and/or work surface. Adjust the chain so it is tight and secure. Please refer to the diagram.

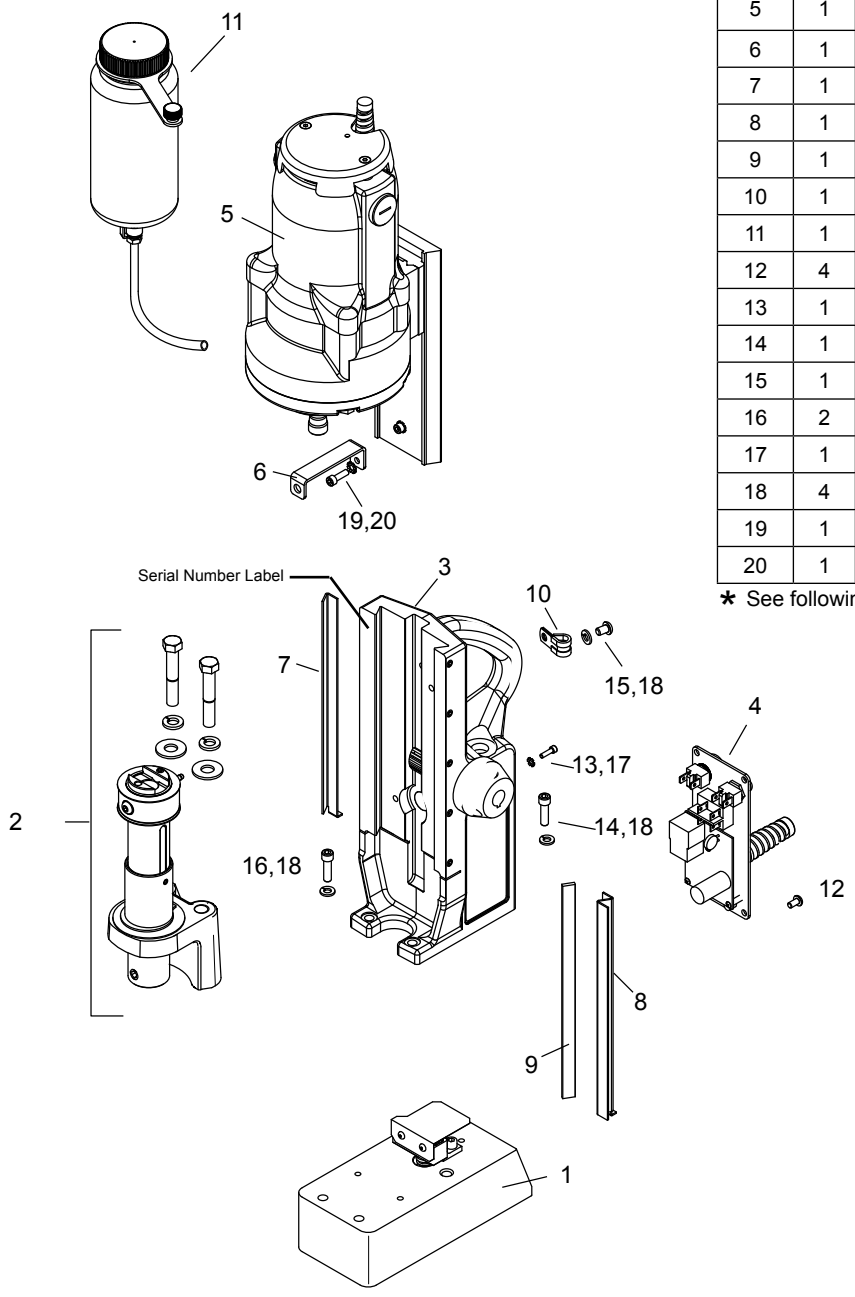


COOLANT BOTTLE ASSEMBLY - P/N: 05060



05060 Coolant Bottle Assembly	
05064	Round Bottle
05059	Coolant Botttle Bracket
05065	Ball Valve
05067	Brass Barb Fitting (bottem of the bottle)
40304	Vinyl Tube
07080	Brass Fitting (vinyl tube to coolant inducer) not included in 05060 kit.

0914102 HMD914 Magnet Base Drill (115v Standard Base)



Item	Qty	Part No.	Description
1	1	*07047	Magnet / Switch Assembly (115v standard base)
2	1	*07074	Arbor / Front Support Brkt Assembly (115v standard base)
3	1	*05933	Drill Housing Assembly
4	1	*05188	Control Panel Assembly
5	1	*05976	Motor / Slide Assembly (115 volt)
6	1	05979	Coolant Inducer Bracket
7	1	05980	Brass Gib (right side)
8	1	05981	Brass Gib (left side)
9	1	05982	Steel Gib
10	1	02420	Cable Clamp
11	1	05060	Coolant Bottle Assembly
12	4	41044	Screw BHC #10-32 X 3/8
13	1	17002	Screw SHC #6-32 X 1/2
14	1	40077	Screw SHC 1/4-20 X 1
15	1	02461	Screw BHC 1/4-20 X 3/8
16	2	10553	Screw SHC 1/4-20 X 3/8
17	1	90052	Lock Washer
18	4	90028	Lock Washer
19	1	40038	Screw SHC #10-32 X 5/8
20	1	10560	Lock Washer

* See following pages for Assembly Breakdowns.

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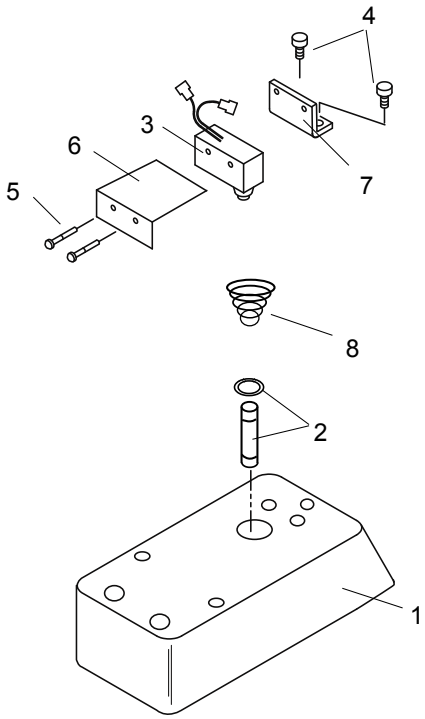
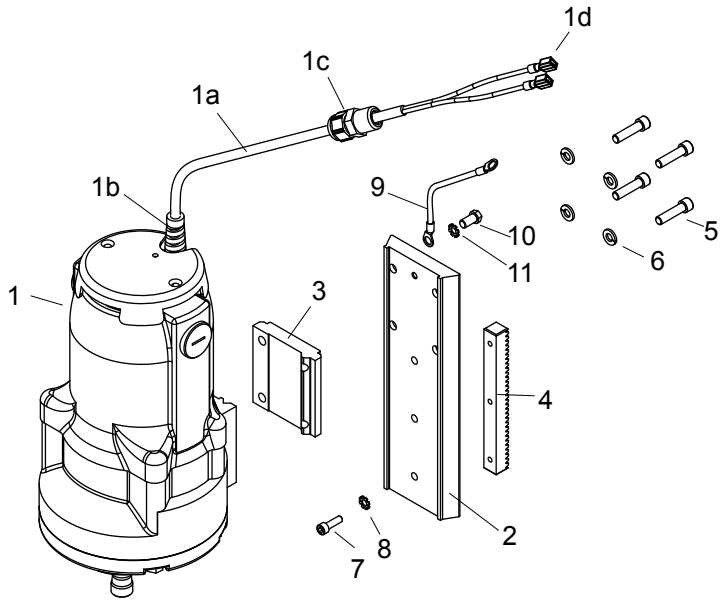


Standard Base Magnet Assembly

07047 115v Assembly (includes items 1-8)

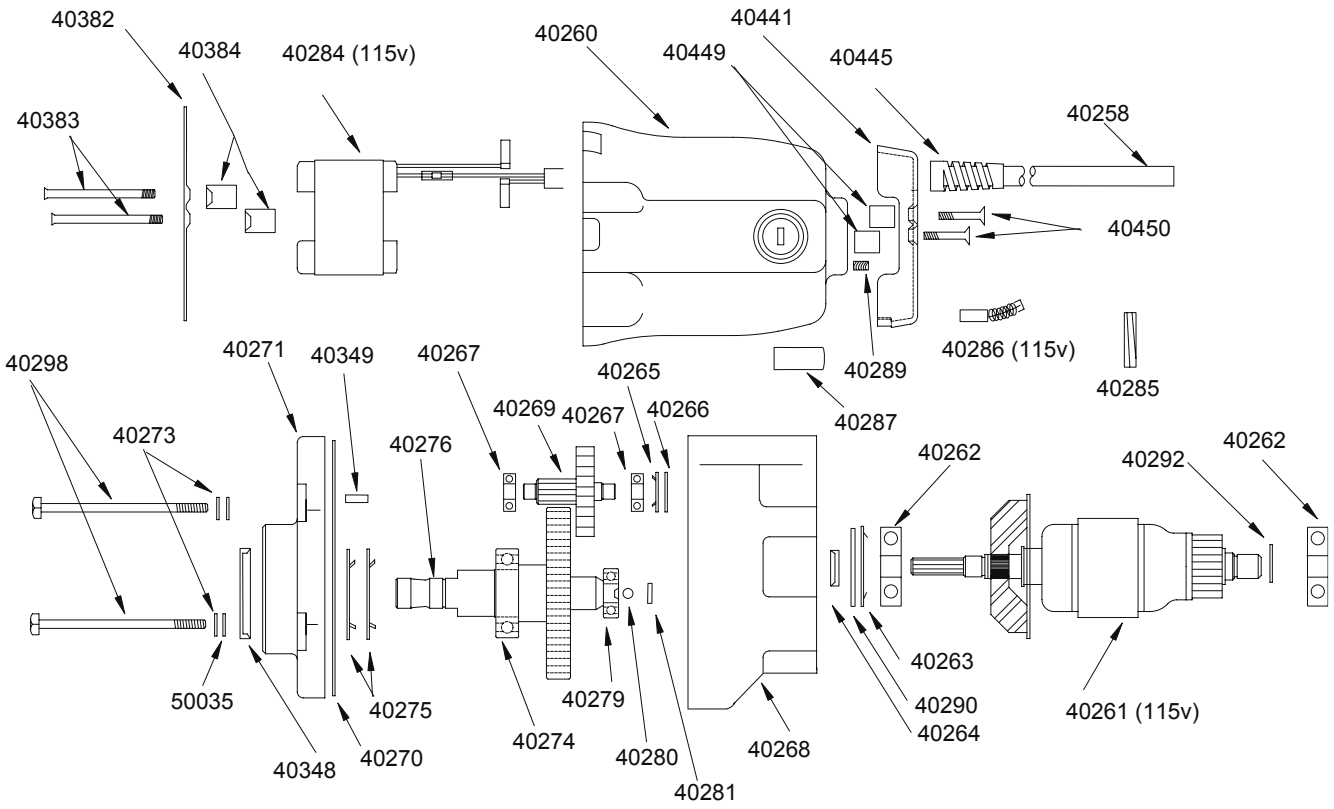
Item	Qty	Part No.	Description
1	1	07046	Magnet Assembly (115v)
2	1	04961	Plunger Assembly
3	1	04885	Microswitch Assembly
4	2	10971	SCR-SHC 1/4-20 X 1/2
5	2	10972	SCR-BHC #6-40 X 3/4
6	1	10983	Microswitch Shield
7	1	04909	Safety Switch Bracket
8	1	17271	Spring



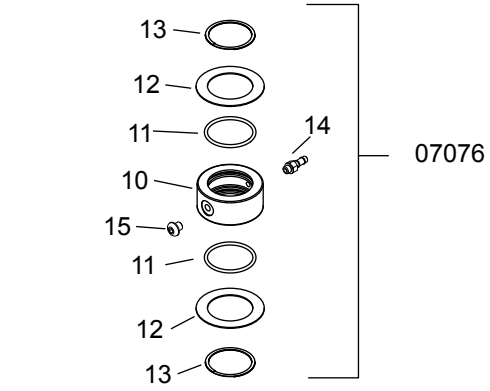
05976 Motor / Slide Assembly

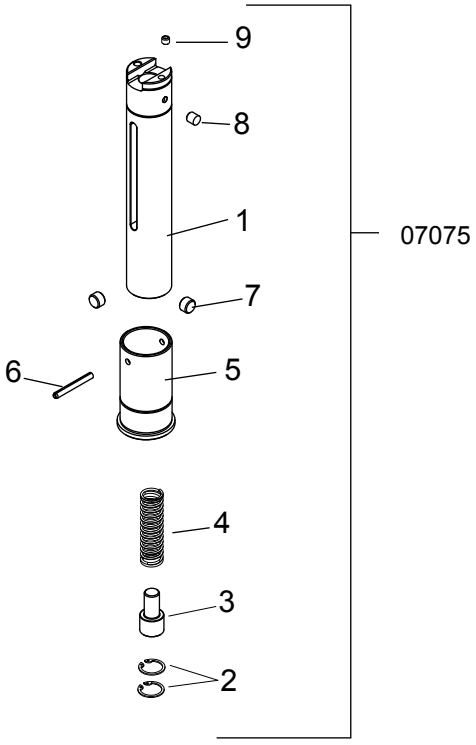
Item	Qty	Part No.	Description
1	1	05983	Motor Assembly (115 volt) includes 1a-1d
1a	1	40258	Motor Cord
1b	1	40445	Strain Relief
1c	1	02411	Strain Relief
1d	2	90019	16-14GA.Female Terminal
2	1	05977	Slide Assembly
3	1	05978	Spacer
4	1	02428	Rack Gear
5	4	01121	Screw SHC 1/4-28 X 1-1/4
6	4	90028	Lock Washer
7	3	40038	Screw SHC #10-32 X 5/8
8	3	10560	Lock Washer
9	1	40464	Ground Strap
10	1	40465	Hex Bolt 1/4-20 X 1/2
11	1	90065	Lock Washer

Refer to the Motor Parts List for individual components

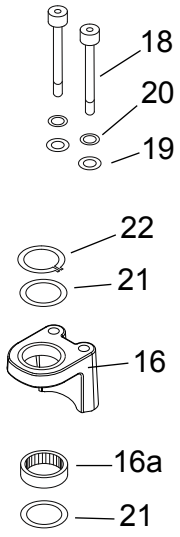


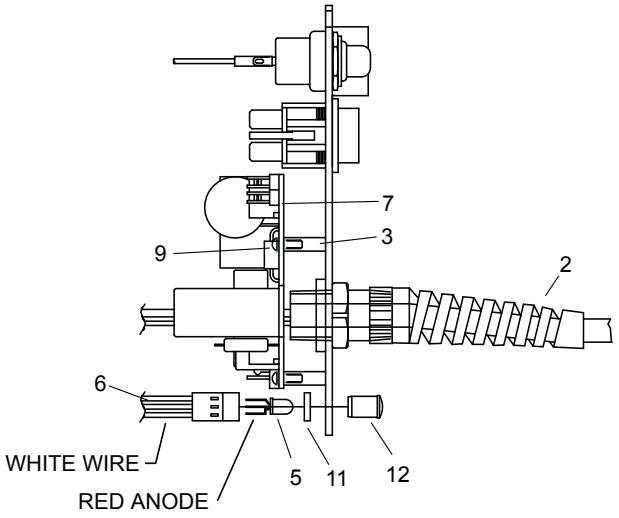
Motor Parts List					
Item	Qty	Description	Item	Qty	Descrption
40258	1	Motor Cord Assembly	40285	2	Brush Plug
40260	1	Motor Housing	40286	1	Brushes (pair) 115 volt
40261	1	Armature Assy. (115 volt)	40287	2	Brush Holder
40262	1	Bearing	40284	1	Field Assembly (115 volt)
40263	1	Flat Spring	40289	2	Screw #10-32 X 1/4
40264	1	Seal	40290	1	Washer
40265	1	Flat Spring	40292	1	Retaining Ring
40266	1	Washer	40298	4	Screw 1/4-20 X 3-1/2
40267	2	Bearing	40378	1	Seal
40268	1	Gear Housing	40349	1	Plug
40269	1	Gear Cluster	40350	1	Syntech Grease 8 oz.
40270	1	Gasket	40382	1	Baffle
40271	1	Gear Housing Cap	40383	2	Screw #10-32
40273	4	1/4” Lock Washer	40384	2	Baffle Spacer
40274	1	Bearing	40441	1	End Cap
40275	2	Flat Spring	40445	1	Stain Relief
40276	1	Output Gear w/bearing	40449	2	Spacer
40281	1	Motor Slug	40450	2	Screw #10-32 X 1
40279	1	Bearing	50035	4	Washer 1/4 int. tooth
40280	1	Ball	90424	2	Brush Holder Clip





07074 Arbor Assembly with Coolant Inducer			
07075	**Arbor Body Assembly**		
Item	Qty.	Part No.	Description
1	1	07077	Arbor Body
2	2	10517	Retaining Ring
3	1	07079	Spring Seat
4	1	05049	Spring
5	1	40223	Ejection Collar
6	1	40312	Roll Pin
7	2	40222	Set Screws 7/16-14 X .305
8	1	40256	Set Screw 5/16-18 X .38
9	1	07083	Set Screw M6 X 1 X 5mm
07076	**Coolant Inducer Assembly**		
Item	Qty.	Part No.	Description
10	1	07078	Inducing Ring
11	2	40300	O-Ring 1-3/8x1-9/16x3/32
12	2	40301	Thrust Washer
13	2	40302	Retainer Ring
14	1	07080	Hose Fitting
15	1	07082	Screw - BHC 1/4-28 X 1/4
Individual Components			
16	1	07141	Front Support Bracket w/bearing
16a	1	40232	Front Support Bracket Bearing
17	1	07081	Spacer
18	2	40594	Bolt 3/8-24 X 3
19	2	40392	Flat Washer
20	2	40391	Lock Washer
21	2	40234	Thrust Washer
22	1	40398	Retaining Ring



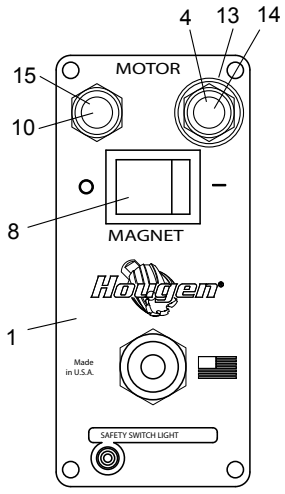


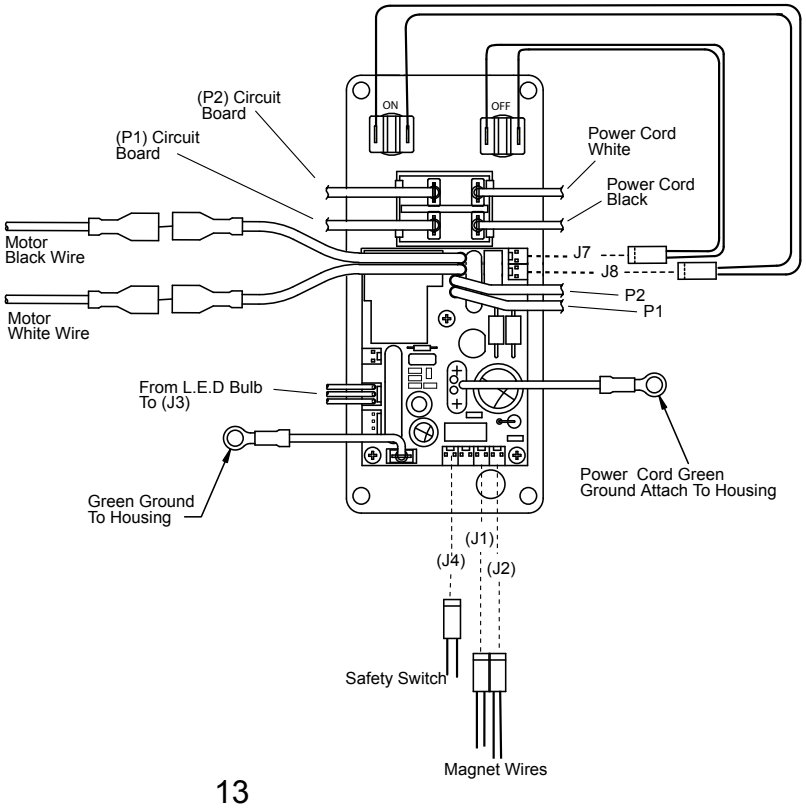
NOTE: WHEN INSERTING L.E.D. DETAIL#5 INTO HARNESS DETAIL#2 MAKE SURE FLAT ON BULB LINES UP WITH WHITE WIRE ON HARNESS.

115 volt Control Panel Assembly

05188 Control Panel Assembly

Item	Qty	Part No.	Description
1	1	07011	Faceplate
2	1	90571	Power Cord Assembly (115 volt)
3	3	02548	Stand Off 3/16 X 9/16
4	1	13334	Motor ON Switch
5	1	04881	L.E.D Buld
6	1	04877	Wire Harness L.E.D
7	1	05826	Circuit Board (115 volt)
8	1	04614	Magnet Switch
9	3	02547	Screw #4-40 X 5/16
10	1	01335	Motor OFF Switch
11	1	04878	Spacer
12	1	04879	Clear Lens
13	1	01226	Switch Guard
14	1	02409	Green Switch Cover
15	1	01228	Red Switch Cover
	1	05205	Green Wire Harness (not shown)



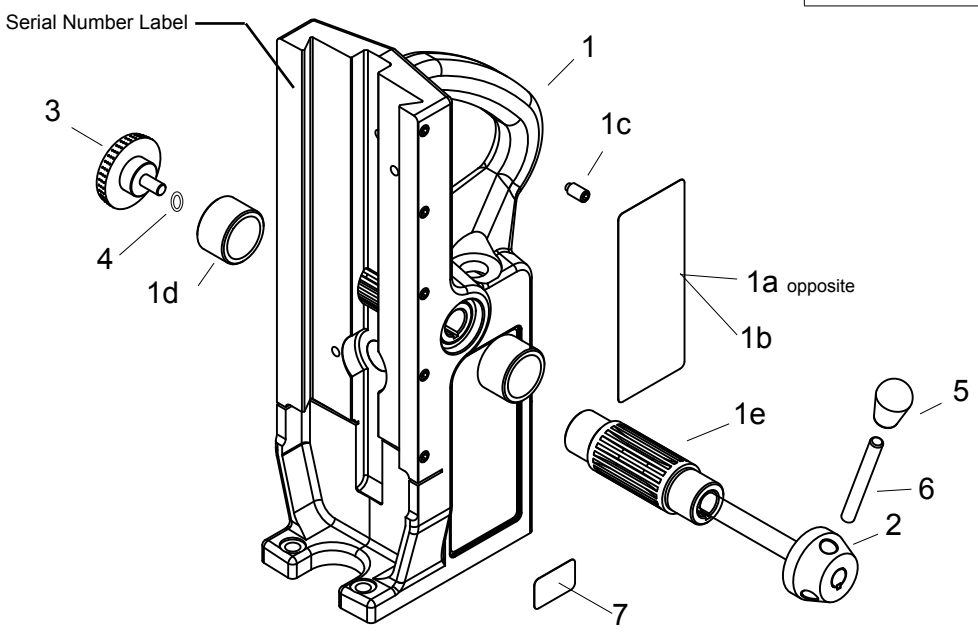


05933 Drill Housing Assembly

Use with the 115 volt machines

Item	Qty	Part No.	Description
1	1	05932	Drill Housing (includes 1-1e)
1a	1	07036	CSA Safety Label
1b	1	07035	115 volt Label
1c	5	40237	Set Screw 1/4-28 X 1/2
1d	2	40231	Bronze Bushing
1e	1	40229	Feed Gear
2	1	40254	Feed Hub Assembly
3	1	05839	Rubber KNOB
4	1	10679	Washer-Flat 1/4 type A
5	3	*04532	Feed Handle Knobs
6	3	*10569	Feed Handles
7	1	07015	Swivel Label (Swivel Drills Only)
8	1	10648	Screw SHC #10-32 X 1/2

* Not Supplied with Housing Assembly



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