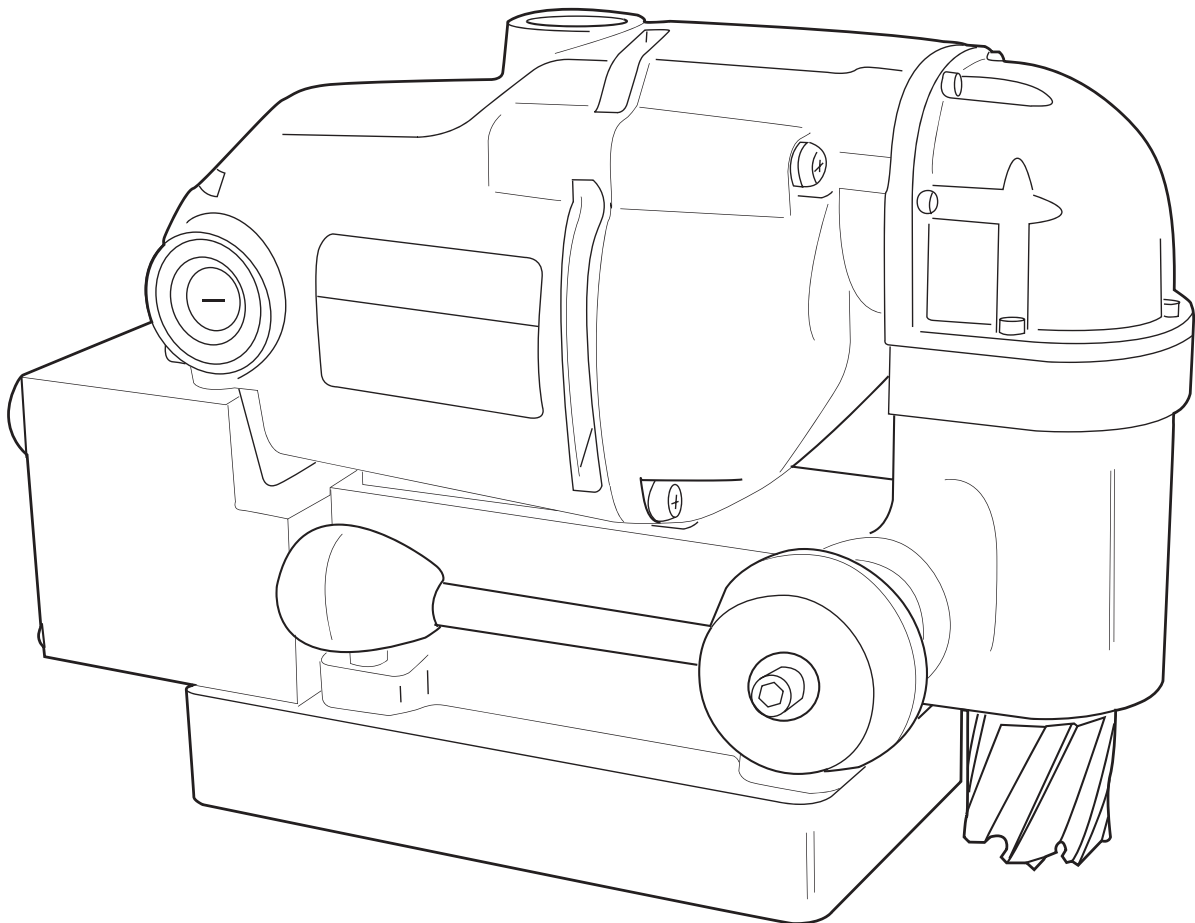




HMD151, HMD151(AUS), HMD151SGP PORTABLE MAGNETIC DRILLS OPERATOR'S MANUAL



FOR USE WITH ROTALOC PLUS™ CUTTERS

HOUGEN®

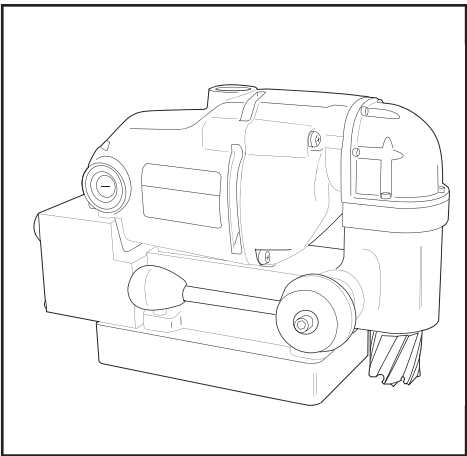
MAGNETIC DRILL

Model HMD151,HMD151(AUS), HMD151

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.



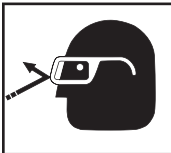
Specifications

Cutter Type.....	RotaLoc Plus™
Hole Capacity.....	12mm to 35mm
Depth of Cut.....	25mm
Motor.....	450 RPM, 4A
Net Weight.....	10.2 kg

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SAFETY FIRST



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



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



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! 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

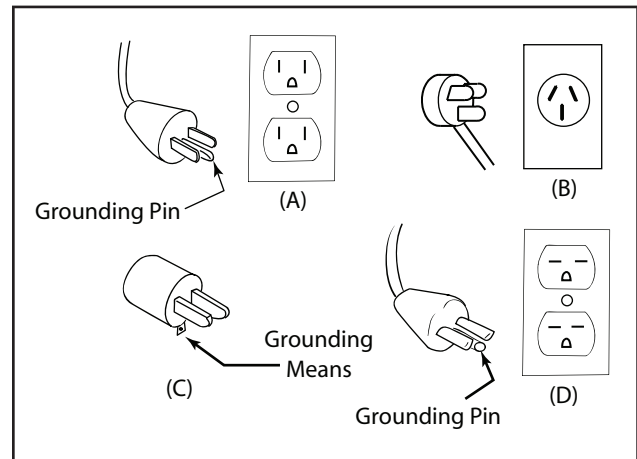
Do not let visitors contact tool. All visitors should be kept away from work area while in use.

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.

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



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.

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

Important Safety Instructions - Continued

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.

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.

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

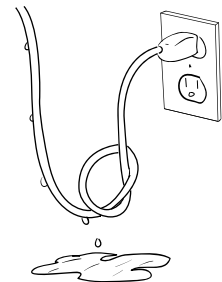
Changing of the circuit breaker to a higher amp rated breaker, or bypassing the circuit breaker is not recommended and is cause for cancelation of the product warranty.

27. Circuit Breaker Operation

The circuit breaker is a thermal circuit breaker. When it reaches the higher temperature rating it will trip and cause the unit to shut down. This is a protection device and can be reset after 5 to 10 seconds of cool down period. To reset the circuit 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

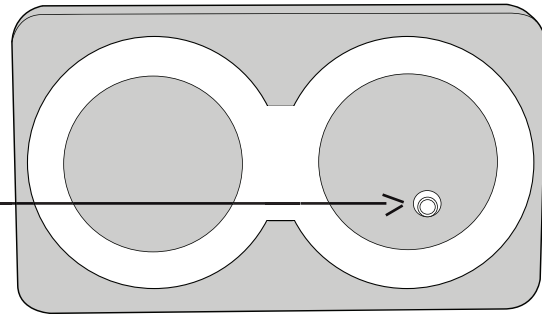
Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop as shown. Also elevate extension cords or gang box connections.



29. SAVE THESE INSTRUCTIONS.

SAFETY SWITCH

NOTE: The Safety Switch located in the base of the unit shuts off the motor when the unit lifts. The magnet will stay engaged until you turn off the magnet. It is important to keep this area clean and free from chips. Periodically check this switch for proper function and if for some reason it is not working properly, send the unit to an authorized repair center for service.



SAFETY SWITCH INDICATOR LIGHT

The Safety Switch Indicator Light is a Standard Safety Feature on HMD151 magnetic drills. Its purpose is to inform the user that an unsafe condition exists or the safety switch is defective.

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.

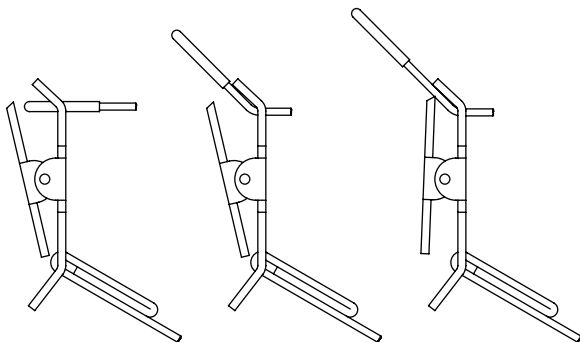
Magnet will have a weak condition on material less than 3/8" thick.

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

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

OPERATING INSTRUCTIONS

1. Place drill on material and locate for drilling hole.
2. Press magnet switch to "ON"
3. Thread safety strap through opening between motor and drill housing. Ensure that strap does not interfere with operation of feed handles. Insert tab of strap into buckle. Cinch strap tight to material and drill housing. Check for slack and adjust as needed.



CAUTION:

- Keep strap clear of cutting area, chips, and rough edges on material.
- Inspect strap periodically for fraying and damage. Do not use a damaged safety strap.

4. Apply liberal amount of cutting fluid or stick lubricant to cutter. Additional lubrication may be required to finish cut.
5. Make certain that cutter is clear of workpiece and turn motor ON by pressing the motor START button.

6. Feed Cutter slowly into workpiece. Only after cutting path is established to a depth of about 2mm can additional force be applied to feed handles.

Ease up on feed pressure as cutter starts breaking through.

CAUTION: Do not over-feed cutter. Excessive feed pressure may cause the magnet to break free from material.

DRILLING MULTIPLE LAYER MATERIALS:

****Special Cutter Geometry required**

Second layer penetration may be difficult. Slight additional feed pressure may be required (avoid over-feed as noted above).

If unable to penetrate second layer, withdraw cutter from material ejecting slug and clean away any remaining chips. Feed cutter in hole and continue cut.

- Turn motor off when cut is finished.
 - Fully retract cutter from material, ejecting the slug.
 - Remove safety strap.
7. Turn magnet switch to "OFF" position.

CAUTION: Retain firm hold on drill to prevent dropping.

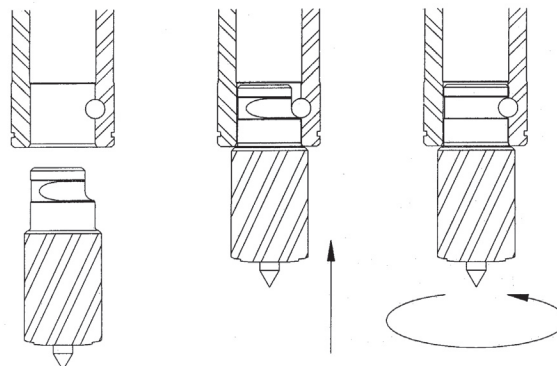
Cutter I.D. may collect chips, restricting depth of cut. Cutter should be frequently inspected and any chips or debris removed.

OPTIONAL FEED METHODS:

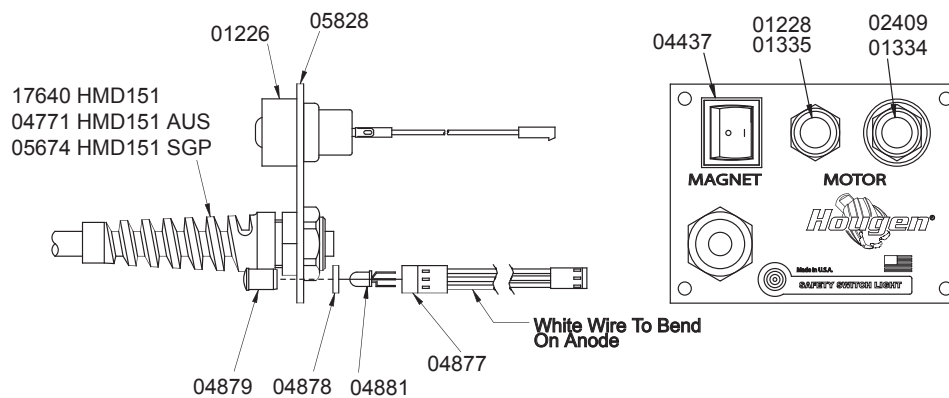
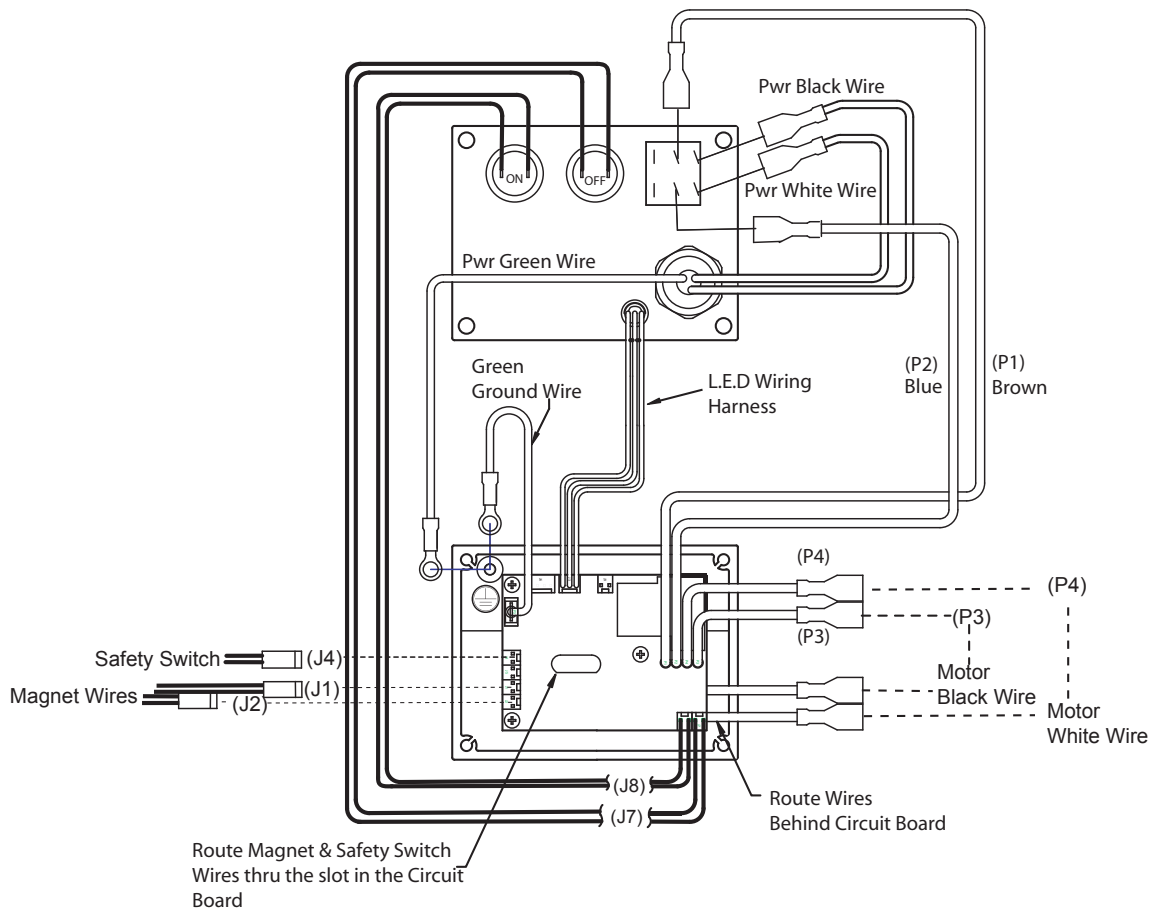
- 5/8" Box Wrench
- Ratchet with 5/8" Socket (shown below)
- **NO PLIERS OR OPEN END WRENCH** (will damage threaded feed handle mounting holes)

Rotaloc Plus™ Cutter Installation

1. Disconnect machine from power source.
2. Insert pilot into cutter.
3. Align flat on shank with pin in spindle.
4. Insert cutter into spindle.
5. Give cutter 1/4 turn in opposite direction of flutes.

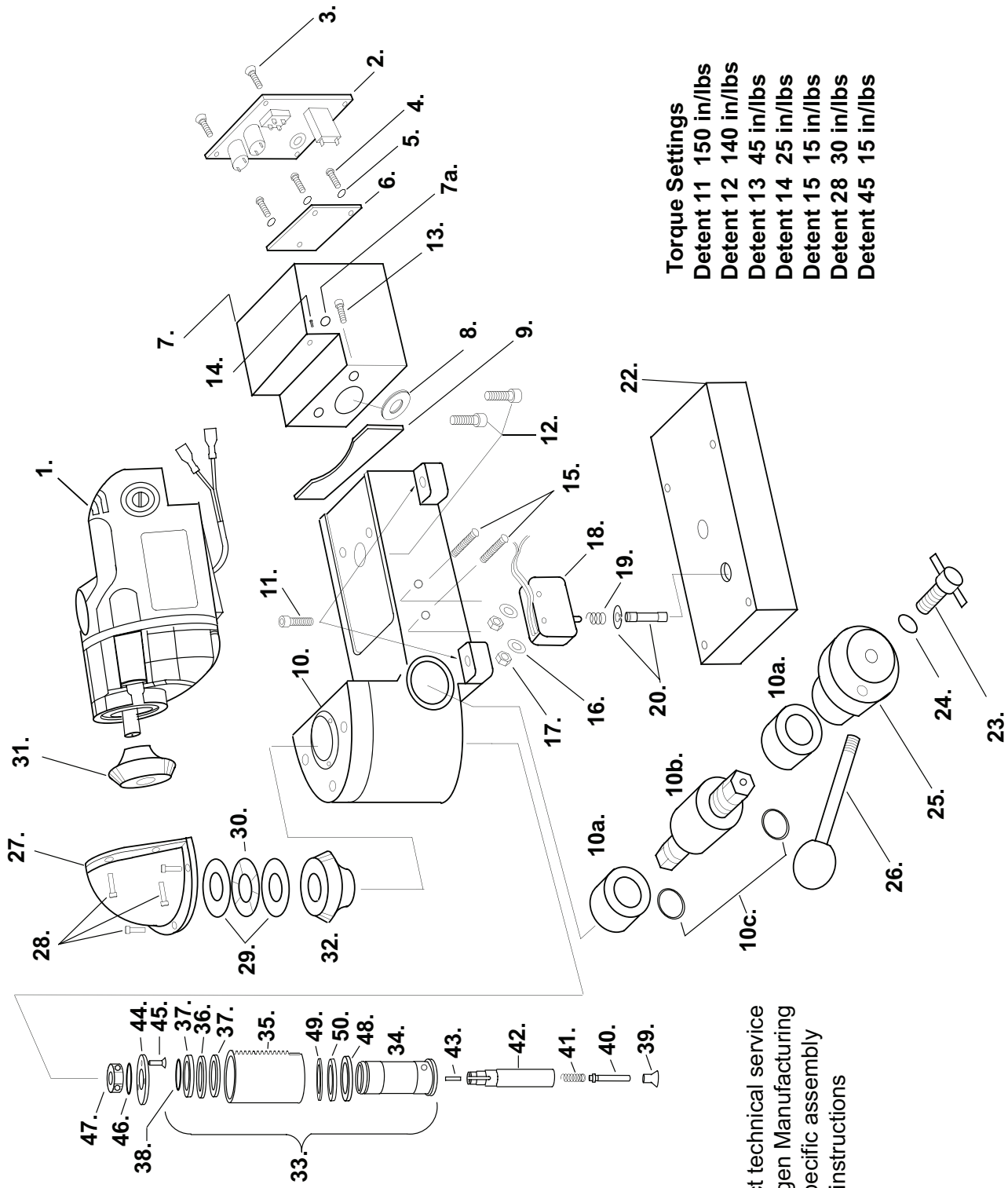


CONTROL PANEL /HOOKUP DIAGRAM



PART #	DESCRIPTION	QTY	PART #	DESCRIPTION	QTY
01226	Switch Guard	1	04879	L.E.D Lens	1
01228	Red Switch Cover	1	04881	L.E.D Bulb	1
01334	Motor ON Switch	1	05674	Power Cord (SGP)	1
01335	Motor OFF Switch	1	05827	Circuit Board	1
02409	Green Switch Cover	1	05828	Faceplate	1
04437	Rocker Switch 230V	1	17640	Power Cord	1
04771	Power Cord (AUS)	1	17693	Faceplate Assy	1
04877	L.E.D Wire Harness	1	17694	Faceplate Assy-AUS	1
04878	Spacer	1	17695	Faceplate Assy-SGP	1

HMD151 DRILL PARTS DIAGRAM



Torque Settings

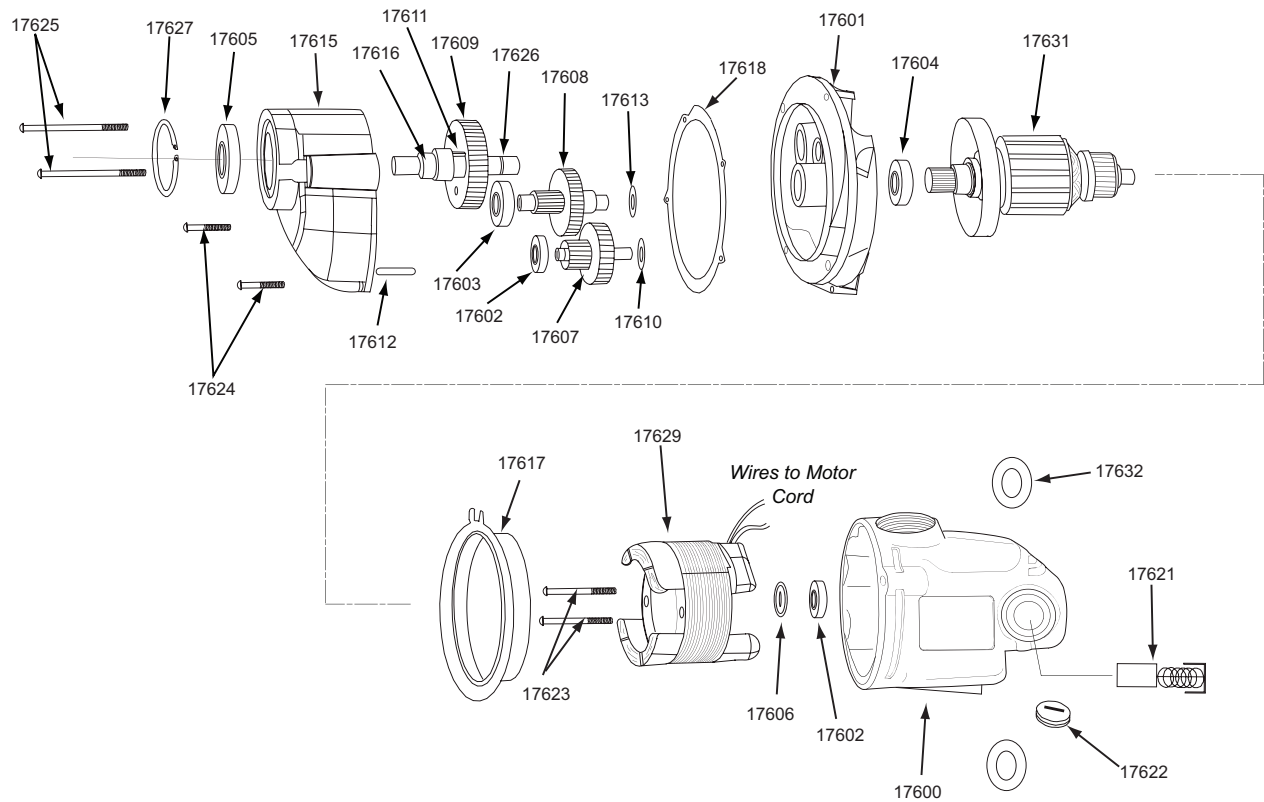
Detent 11	150 in/lbs
Detent 12	140 in/lbs
Detent 13	45 in/lbs
Detent 14	25 in/lbs
Detent 15	15 in/lbs
Detent 28	30 in/lbs
Detent 45	15 in/lbs

Contact technical service
@ Hougen Manufacturing
for specific assembly
instructions

HMD151 PARTS LIST

Item #	Part #	Description	Qty	Item #	Part #	Description	Qty
1	17519	Motor Assy	1	23	17291	Screw SHC M6-1	1
2	17693	Faceplate Assy	1	24	90027	Washer SAE Flat	1
	17694	Faceplate Assy Aus Model	1	25	17282	Feed Hub Assy	1
	17695	Faceplate Assy Sgp Model	1	26	17283	Feed Handle Assy	1
3	24153	Self Tapping Screw	4	27	17510	Gear Cap Assy	1
4	02547	Screw Phillips #4-40	3	28	17002	Screw SHC #6-32	7
5	10714	Washer Lock #4 Ext	3	29	17517	Thrust Washer	2
6	05827	Circuit Board	1	30	17516	Thrust Bearing	1
7	17691	Electrical Box Assy	1	31	17502	Gear Left Hand	1
7A	17557	Ground Label	1	32	17278	Gear Right Hand	1
8	17274	Grommet	1	33	17646	Quill & Arbor Assy	1
9	17293	Motor Seal	1	34	17649	Arbor Assy	1
10	17279	Housing Assy	1	35	17647	Quill Assy	1
10a	17495	Bronze Bushing	2	36	17546	Thrust Washer Bronze	1
10b	17298	Feed Gear	1	37	17547	Thrust Washer Steel	2
10c	40546	O-Ring	2	38	04720	Retaining Ring Left Hand	1
11	10553	Screw SHC 1/4-20	4	39	17493	Screw Flat Head Mod.	1
12	75096	Screw SHC M6 x 20mm	2	40	17494	Plunger	1
13	75094	Screw SHC M5 x 12mm	2	41	17492	Compression Spring	1
14	04439	Screw BHS #10-32	1	42	17280	Splined Shaft	1
15	17476	SCR BHC Safety Torx	2	43	17277	Key 1/8" Square	1
16	90052	Washer Lock #6 Ext	2	44	17289	Washer Bearing Retaining	1
17	40374	Nut Hex #6-32	2	45	04718	Screw Pan Phillips	3
18	04885	Safety Switch	1	46	17475	Retaining Ring	1
19	17271	Taper Spring	1	47	17270	Ball Bearing	1
20	17462	Plunger	1	48	17643	Thrust Washer Shield	1
21	17275	Ring Retaining E Clip	1	49	17644	Thrust Washer	1
22	17651	Magnet	1	50	17645	Thrust Needle Bearing	1

Motor Diagram and Parts List



Part #	Description	Qty	Part #	Description	Qty
02413	Motor Cord	1	17612	Dowel Pin	1
04502	Brush Cover	2	17613	Flat Washer	1
10538	Washer #8	1	17615	Gear Housing	1
11053	BHS Screw #8-32	1	17616	Spindle	1
17294	Label, Motor	1	17617	Fan Guide	1
17537	Label, Motor Safety	1	17618	Gasket	1
17600	Field Case	1	17621	Carbon Brush (Pair)	1
17601	Gear Housing	1	17622	Brush Cap	2
17602	Ball Bearing	2	17623	Pan Head Screw	2
17603	Ball Bearing	1	17624	Pan Head Screw Short	2
17604	Ball Bearing	1	17625	Pan Head Screw Long	2
17605	Ball Bearing	1	17626	Retaining Ring	1
17606	Dust Seal	1	17627	Retaining Ring	1
17607	1st Inter. Gear Assy	1	17629	Field	1
17608	2nd Inter. Gear Assy	1	17631	Armature	1
17609	Spur Gear	1	17632	Paper Washer	2
17610	Flat Washer	1	17687	Lock Washer Heli M6	4
17611	Key	1	75150	Lock Washer Heli M5	2
			75289	Pan Head Screw	2

Rotaloc™ Series of Cutters for the HMD151

The ROTALOC PLUS™ cutters are made specifically for the HMD151. They are equipped with 5/8" tool-less bayonet-style twist and lock shank. The Rotaloc Cutters are manufactured for 19.2mm / 3/4" D.O.C. The Rotaloc Plus Cutters are manufactured for 25mm / 1" D.O.C.

19.2mm / 3/4" - D.O.C. ROTALOC™ CUTTERS STACK CUT GEOMETRY

PART #	SIZE	PART #	SIZE
17116	1/2"	17300	12mm
17118	9/16"	17302	13mm
17120	5/8"	17304	14mm
17122	11/16"	17306	15mm
17124	3/4"	17308	16mm
17126	13/16"	17310	17mm
17128	7/8"	17312	18mm
17130	15/16"	17314	19mm
17132	1"	17316	20mm
17134	1-1/16"	17318	21mm
17100	PILOT	17320	22mm
		17322	23mm
		17324	24mm
		17325	24.5mm
		17326	25mm
		17328	26mm
		17329	26.5mm
		17330	27mm
		17100	PILOT

25mm / 1" - D.O.C. ROTALOC PLUS™ CUTTERS STANDARD GEOMETRY CUTTERS

PART #	SIZE	PART #	SIZE
17216	1/2"	17400	12mm
17218	9/16"	17402	13mm
17220	5/8"	17404	14mm
17222	11/16"	17406	15mm
17224	3/4"	17408	16mm
17226	13/16"	17410	17mm
17228	7/8"	17412	18mm
17230	15/16"	17414	19mm
17232	1"	17416	20mm
17234	1-1/16"	17418	21mm
17236	1-1/8"	17420	22mm
17238	1-3/16"	17422	23mm
17240	1-1/4"	17424	24mm
17242	1-5/16"	17425	24.5mm
17244	1-3/8"	17426	25mm
17470	PILOT	17428	26mm
		17429	26.5mm
		17430	27mm
		17432	28mm
		17434	29mm
		17436	30mm
		17438	31mm
		17440	32mm
		17442	33mm
		17444	34mm
		17446	35mm
		17470	PILOT

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 Repair Center or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, Michigan 48473.

Hougen Drills (Hougen Cutters) 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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