



PORTABLE MAGNETIC DRILLS

OPERATOR'S MANUAL

10925 AND 10926



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

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HOUGEN®

Portable Magnetic Drills

Models 10925 and 10926

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 Operators 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.

Factory Authorized Warranty Repair Centers

United States - East

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

Awisco Repair Center
55-16 43rd Ave.
Maspeth, NY 11378
(718) 786-7788

Boyer Machinery Co.
2280 Wyandotte Road
Willow Grove, PA 19090
(215) 657-2242

Colony Hardware Supply Co.
15 Stiles Street
New Haven, CT 06512
(203) 466-5252

Hanes Supply Repair Center
10 Cairn Street
Rochester, NY 14609
(716) 826-2636

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

Pennsylvania Tool Sales
and Service, Inc.
625 Bev Road
Youngstown, OH 44512
(330) 758-0845

Weld Tooling Corp.
3001 W. Carson Street
Pittsburgh, PA 15204
(412) 331-1776

West

ATS Repair Center
2400 West Directors Row
Salt Lake City, UT 84125
(801) 972-3182

Caltool Industrial Supply
470 Hester Street
San Leandro, CA 94577
(510) 729-0600

Kenbil Service Co.
2900 Adams St., B-15
Riverside, CA 92504
(909) 689-6633

Quimby Welding Repair
1603 Northwest 14th Ave.
Portland, OR 97209
(503) 221-1100

Southeast

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

Mid-South Welding Supply
505 51st. Avenue
Meridian, MS 39307
(601) 483-9331

South

Allied Sales & Service Co.
1508 River Oaks Rd., West
Jefferson, LA 70123
(504) 734-9566

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

Midwest

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

Miller Industrial Supply Co.
1695 N. 21st
Decatur, IL 62525
(217) 428-7787

Hougen Manufacturing, Inc.
3001 Hougen Drive
Swartz Creek, MI 48473
(810) 635-7111

Westbrook Engineering
23501 Mound Road
Warren, MI 48091
(810) 759-3100

Southwest

Arcmaster Repair Center
301 Woodrow Ave
Fort Worth, TX 76105
(817) 531-8101

Rex Supply Repair Center
3715 Harrisburg
Houston, TX 77003
(713) 222-2251

Canada

OK Power Tool
14740 115 Avenue
Edmonton, Alberta
Canada T5M 3B9
(403) 454-5111

Outiltech Orleans, Inc.
5695 Rue Rideau
Quebec, Quebec
Canada G2E 5V9
(418) 877-7776

Edward H. Pope, Ltd.
10 Imperial Court
Brampton, Ontario
Canada L6T 4X4
(905) 458-4800

Power Tool Clinic
19835-56 Ave
Langley, B.C.
Canada V3A 3V1
(604) 530-3550

O.T.I. Repair Center Inc
195 Rue Henry Bessemer
Bois Des Filion
Quebec Canada J6Z 4S9
(450) 965-2224

Cutting Capacity

Recommended cutting capacity when using "12,000-Series" Rotabroach Cutters-

Power Feed Mode

- 2" diameter maximum - 1" depth of cut
- 1-1/2" diameter maximum - 2" depth of cut
- 1-1/16" diameter maximum - 3" depth of cut

Manual Feed Mode

- 2-1/16" diameter maximum - 1" or 2" depth of cut
- 2" diameter maximum - 3" depth of cut

Actual cutting capacity may vary based on application. Feed setting chart on panel is recommended starting point for diameter range. Adjustments may be needed for optimum cutting performance

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)
 - 10570 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 and microswitch adjustment
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 (10570) onto the three feed handles (10569) and then screw the handles into the hub .
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 "12000-Series" Rotabroach Cutters. A 1/2" diameter bore Arbor Adapter (10851), for mounting 1/2" shank "12,000-Series" Rotabroach Cutters, is optional.

Table 1 Extension Cord Reference Chart

Length of Cord, Feet	Recommended Wire Gauge	Recommended Wire Gauge
	115V Motor 10-12 Amps	230V 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

IMPORTANT SAFETY INSTRUCTIONS

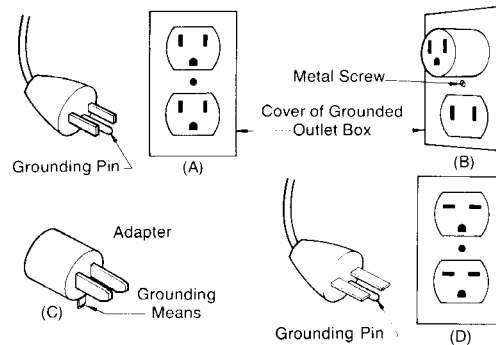
WARNING: When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury, including the following:

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 lug 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. If your unit is for use on 115V, it has a plug that looks like that shown in sketch (A). If it is for use on 230V, it has a plug that looks like that shown in sketch (D). An adapter, see sketches (B) and (C), is available for connecting sketch (A) type plugs to 2-prong receptacles. The green-colored rigid ear, lug, or the like, extending from the adapter must be connected to a permanent ground, such as a properly grounded outlet box.

Note: Use of a grounding adapter is prohibited in Canada by Part I of the Canadian Electrical Code.



3. 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 the loss of power and possible motor damage.

4. 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.

5. Guard Against Electric Shock

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

6. Keep Children Away

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

7. Store Idle Tools

When not in use, tools should be stored in a dry, secure location — out of reach of children.

8. 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.

9. 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.

10. Always Wear Safety Glasses or Goggles

11. Dress Properly

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

12. 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.

13. Do Not Overreach

Keep proper footing and balance at all time.

14. Maintain Tools With Care

Keep tools sharp and clean for better and safer performance. Do not use dull or broken Rotabroach 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. Keep handles dry, clean, and free from oil and grease.

15. Disconnect Tools

When not in use, before servicing, and when changing Rotabroach Cutters or accessories.

16. Remove Adjusting Keys and Wrenches

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

17. Check Damaged Parts

All damaged parts should be replaced before drill should be used. 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.

18. 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.

19. Outdoor Use Extension Cords

When tool is used outdoors, use only extension cords intended for use outdoors and so marked. Refer to **Table 1** for recommended extension cord gauge.

20. 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 Rotabroach Cutters where ejected slug might cause injury (slug ejected at end of cut). Be sure that all safety devices are properly adjusted and in use. 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 Rotabroach Cutter and arbor after each hole. With motor off and power disconnected, grasp chips with leather gloved hand or pliers and pull while rotating counter-clockwise. 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 counter clockwise. Never attempt to free the jammed cutter by starting the motor. If service is required contact your nearest authorize service center.

21. Non-Conforming Cutting Tools

Your Magnetic Drill is designed to use Hougen Rotabroach 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.

22. Operating Near Welding Equipment

Do not operate your Portable magnetic drill on the same work surface in which an arc welder is working. Severe damage to the unit, particularly the power cord, could occur. This could also result in personal injury to the operator.

23. Safe Electrical Connection

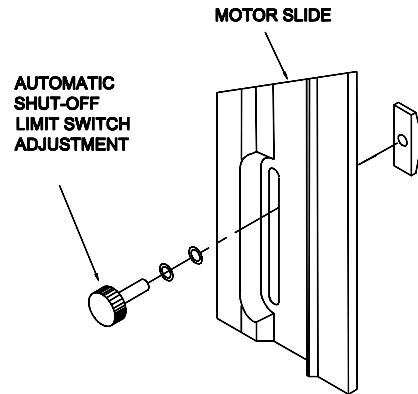
Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop as shown. Also elevate extension cords or gang box connections.

24. Save These Instructions

AUTOMATIC SHUT-OFF LIMIT SWITCH ADJUSTMENT

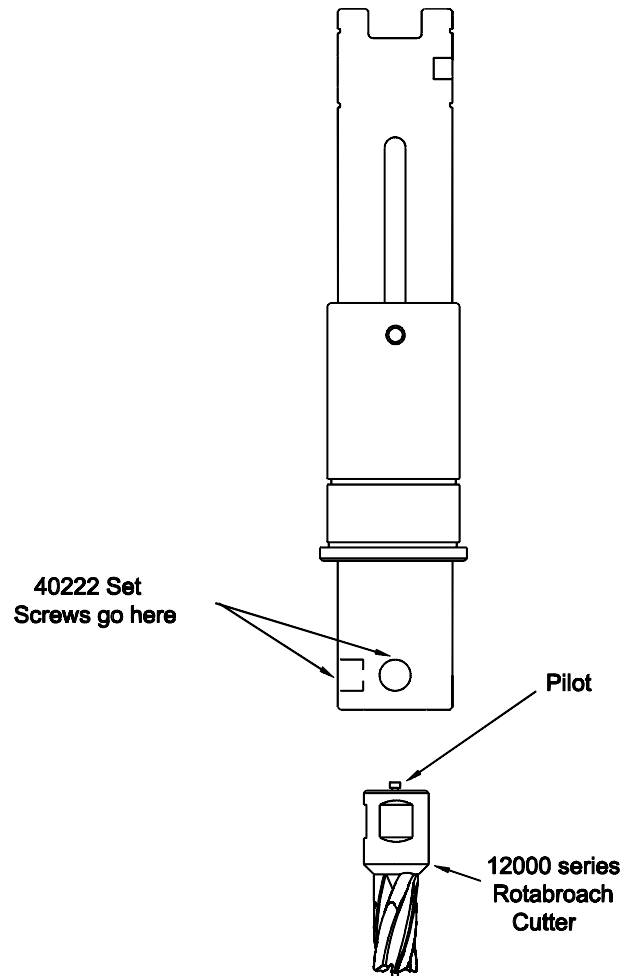
An automatic drill shut-off feature is provided which can be easily adjusted for material thickness and cutter length.

1. Place drill unit on workpiece surface with cutter projecting and clearing end of workpiece.
2. Energize magnet.
3. Move slide down manually until cutter projects approximately 1/16" below work
4. Loosen knurled thumb screw 1/4 - 1/2 turn (until loose) and slide cam down to approximately 1/16" beyond initial contact with limit switch. Tighten thumb screw.
5. Manually move slide up approximately 1/4".
6. Turn on drill and manually feed slide until shut-off to test for proper shut-off position.



INSTALLING ROTABROACH CUTTER IN ARBOR.

1. Disconnect power source.
2. Either 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 Rotabroach cutter.
5. Insert Rotabroach Cutter until flats on cutter shank are aligned with set screw holes and is exactly perpendicular to axis of set screw hole.
6. Insert Set Screws and tighten.



ADJUSTMENT OF GIBS

1. Loosen all Gib screws (40237)
2. Feed the drill up and 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. (40225).
3. Feed the drill up and down again.
4. Adjust Gib screws so that their 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 - 1/4 turn, depending upon your preference.
6. Gibs should be tight enough so that the slide moves up and down smoothly with no wobble or shaking (Looseness will cause cutter breakage).

NOTE: GIBS SHOULD BE LUBRICATED REGULARLY

ARBOR SUPPORT BRACKET ADJUSTMENT

Adjust gibs before adjusting arbor support bracket

1. Turn magnet ON.
2. Loosen Arbor Support Bracket Bolts (40451)
3. Be sure top of arbor is flush with the shoulder on motor spindle and key is fully engaged. Also check arbor-to-spindle screw to make sure it is tight.
4. Turn feed handle until motor and spindle are at the bottom of their travel.
5. Tighten Arbor Support Bolts (400 inch lbs.)
6. Feed slide up and down a few times, checking for free and even vertical movement.

NOTE: Check arbor support bolts regularly to make sure they are tight, or tighten as needed.

IMPACTOR ADJUSTMENT

1. Sharpen or replace impactor point if point is excessively worn or chipped.
2. Adjustment is made with MAGNET ON and impactor over the work surface.
3. Loosen Nyloc Nut (10567) on bottom of Impactor.
4. Screw Impactor (10962) so that the point is flush with work surface.
5. Screw Impactor Point 1/4 - 1/3 turn further toward work surface.
6. Tighten Nyloc Nut, while preventing the Impactor from turning.
7. Check adjustment by placing a 1" x 3" piece of paper under rear edge of magnet and turn magnet ON. Use Slide Hammer (10961) once or twice to impact the point. Paper should not slip out from under magnet then pulled.

NOTE: Impactor adjustment should be checked regularly following the procedure outlined in Step 7 above.

GLIDE POST ADJUSTMENT

Two glide posts are utilized. Post nearest edge of magnet should make initial contact and be set according to instructions. Second glide post setting should be located 1/16" to 1/8" above the other glide post.

1. Adjustment is made with Magnet ON and glide post over the work surface.
2. Remove the Lock Screw (10979)
3. Screw Glide Post (10644) up until the bottom of the body is about 1/4-inch above the work surface.
4. Place a .040" shim between end of Glide Post and the work surface.
5. Screw Glide Post down, compressing plunger until the body of the glide post rests on the shim.
6. Install Lock Screw using 242 Loctite (if available)

REPLACING ARBOR and/or ARBOR SUPPORT BRACKET

1. Remove arbor assembly as described above.
2. Remove the top retaining clip from the arbor and slide the inducer ring and thrust washers off the end of the arbor.
3. Remove the bottom inducer retaining ring clip (40302) from the arbor. Remove the ejector collar retaining ring (40398) and slide the old arbor out of the support bracket.
4. Slide new arbor assembly through arbor support bracket with one thrust washer (40234) on top and another underneath the support bracket. The retaining ring (40398) is installed above the top thrust washer.
5. Put one retaining clip on the new arbor and slide it down about 3/4" past the bottom groove.
6. Slide the inducer ring onto the arbor with a thrust washer on each side. Inducer ring must be below the arbor retaining set screw.
7. Install the other retaining clip into the top groove.

INSTALLING ARBOR ASSEMBLY

1. Slide arbor completely onto spindle so that the spindle key is fully engaged into the arbor slot and the top of the arbor rest firmly on the shoulder of the spindle.
2. Tighten arbor mounting set screw.
3. Replace front support bracket with spacers set for proper depth of cut.
4. Feed the arbor down, allowing the ejector collar to push the coolant ring up and the retaining clip into its groove.
5. Adjust and tighten arbor support bracket before using drill. (See arbor support bracket adjustment procedure)

SAFETY SWITCH ADJUSTMENT

1. Unplug unit from power source and place it on a flat sheet of steel that is at least 3/8" - thick.
2. Only magnet portion should be on steel plate. Rear support block (Containing glide post and impactor) should hang over edge of steel plate.
3. Remove Access hole screw (10977) from back of housing.
4. Insert 5/32" Allen Wrench into access hole and back off (counter clockwise) Microswitch Adjusting Screw (10969) about three full turns.
5. With the allen wrench in place, turn the magnet ON. Depress the motor ON switch, if the motor does not start, continue holding the switch and slowly turn the Microswitch Adjusting Screw clockwise until the motor starts. Release the Motor ON switch. Turn the Microswitch Adjusting Screw clockwise 1-1/2 turns. This should complete the adjustment process.
6. Replace the Access hole screw (10977).
7. Turn Magnet and Motor switches ON. Strike side of magnet at rear with a rubber hammer. Motor should shut off before the magnet moves more than 1/2-inch in any direction.

NOTE: Safety switch adjustment should be checked regularly following the procedures outlined.

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.

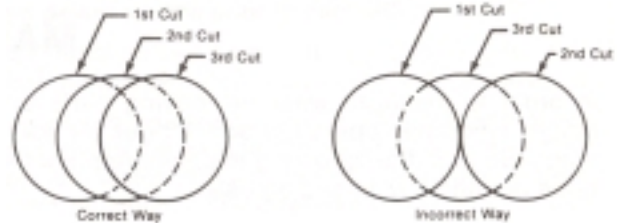
1. Regularly tighten all fasteners and replace worn components.
2. Check motor brushes and replace if worn.
3. Check power cord and motor cord. If cracked or frayed, return to authorized repair center for replacement.
4. Apply grease to the slide dovetails, brass gibs, and the feed gear rack. For best results use Shell Cyprina-RA or equivalent.
5. Remove arbor and pack the bearing in the arbor support bracket with grease.
6. Grease feed handle / hub assembly at grease fitting.

REMOVING ARBOR ASSEMBLY

1. Disconnect Mag Drill from power source.
2. Remove the bottom cutting fluid inducer retaining ring (40302) from its groove and slide down about 3/4 inch.
3. Dis-connect the coolant tube fitting and tube.
4. Slide the cutting fluid inducer ring and thrust washers down the arbor to the clip.
5. Remove arbor support bracket bolts. (40451)
6. Loosen arbor mounting set screw (40256) at top of arbor and remove arbor assembly.

HINTS FOR SMOOTHER OPERATION

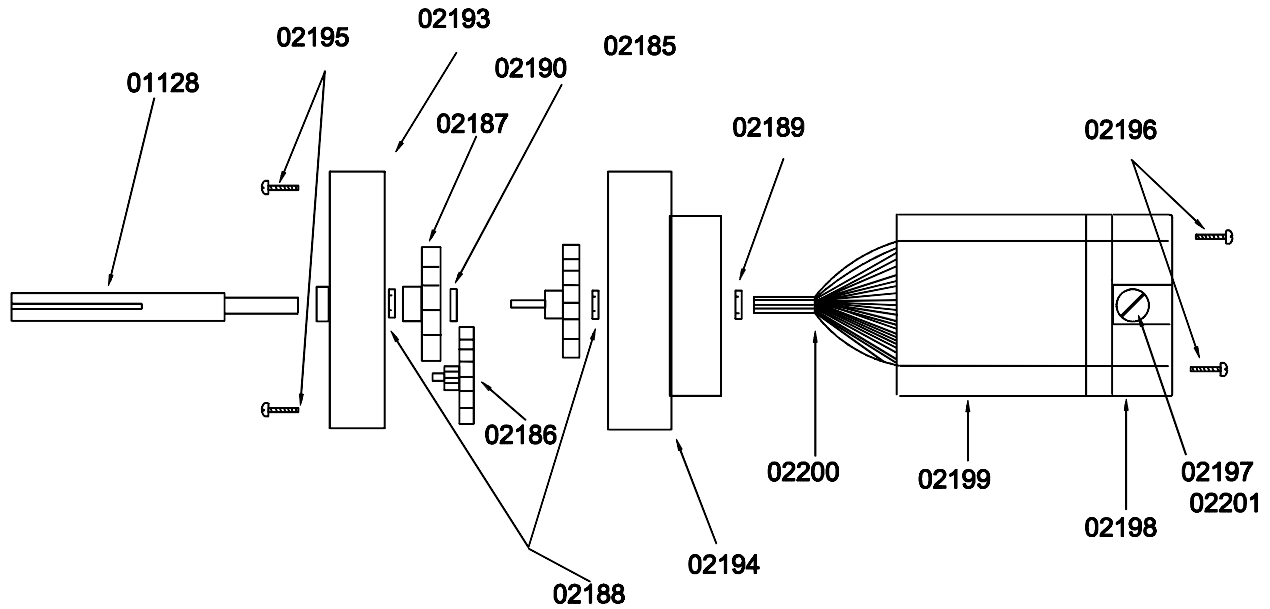
1. Keep inside of Rotabroach cutter clear of chips - chips will interfere with cutting to maximum depth as well as impede free oil flow from arbor to work and can cause cutter breakage.
2. Keep slide dovetails, brass gibs and feed rack lubricated and free of chips and dirt.
3. Keep workpiece, machine, arbor and Rotabroach cutter free of chips and dirt.
4. Tighten all bolts regularly.
5. We highly recommend applying a light viscosity cutting fluid (preferably Hougen cutting fluid) to the tool through the automatic cutting fluid inducer.
6. With motor off, depress pilot occasionally to check metering of oil flow. Lack of oil may cause Rotabroach Cutter to freeze in cut, slug to stick and poor cutter life.
7. 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.
8. Cut overlapping holes as illustrated, using minimum steady pressure. (When cutter is removing material whose cross-section is half or less than the cutter diameter, pilot should be removed and tool should be fed with care. External lubrication should be used.



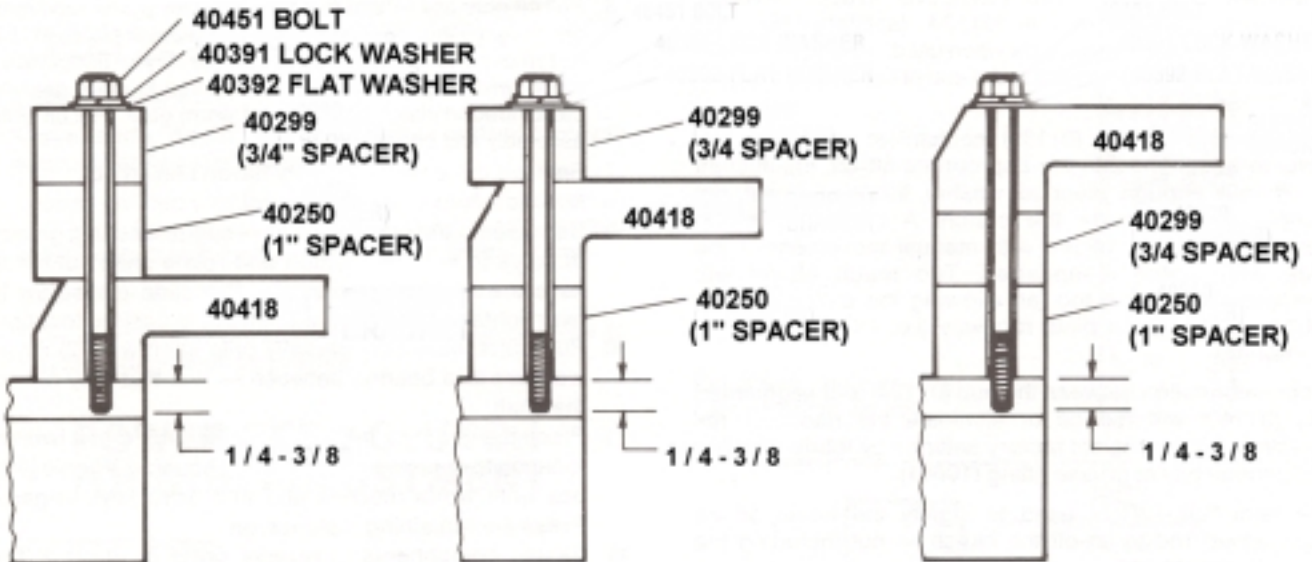
NOTE: When cutting in this manner, cutting fluid may escape from cutting area. Tool should be fed with care, using external lubrication.

9. When cutting large diameter or deep holes it may be necessary to stop in the middle of the cut to add cutting fluid to the reservoir and also 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 re-start the cut.

POWER FEED GEAR MOTOR



ADJUSTING ARBOR SUPPORT BRACKET FOR DEPTH



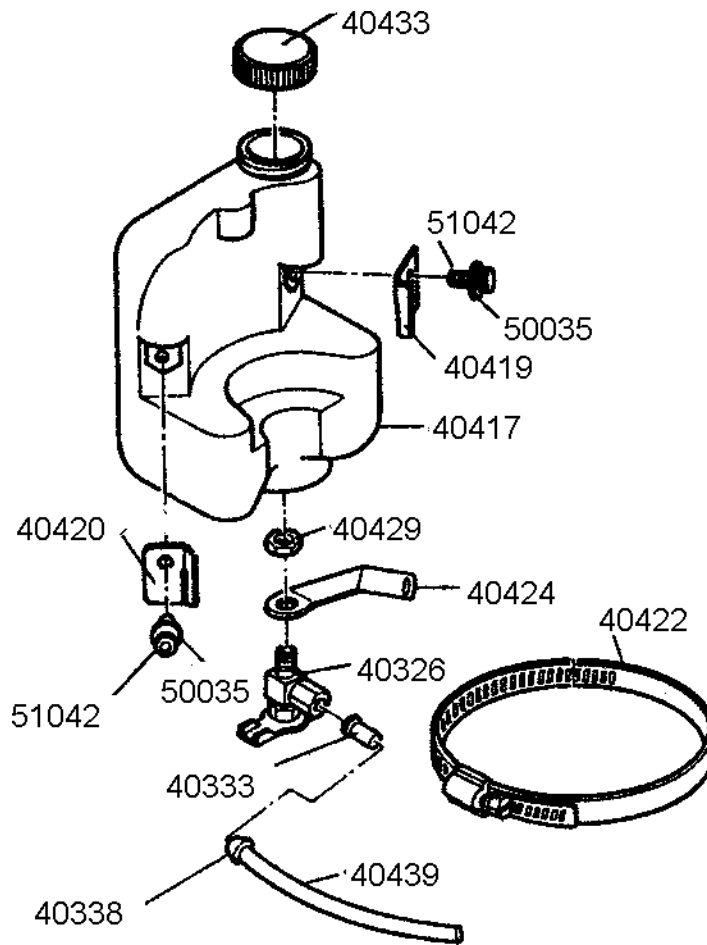
NOTE: Spacers must always be installed with short side toward arbor

Bracket in place for
1" depth of cut

Bracket in place for
2" depth of cut

Bracket in place for
3" depth of cut

COOLANT BOTTLE ASSEMBLY



Checking Operation of Automatic Cutting Fluid Inducer

Note: The automatic cutting fluid inducer system works on a gravity flow basis. Therefore, it is only effective when the drill is mounted on a horizontal or slightly inclined work surface.

1. With Magnetic Drill in operation position, turn feed handle so that the cutter and pilot are above the work surface.
2. Fill cutting fluid bottle with cutting fluid.
3. To test automatic cutting fluid inducer (with the magnet ON and motor OFF), feed the arbor gently toward the work surface until the pilot is pushed up into the cutter. Open the needle valve until fluid is visible filling the plastic tube. Fluid should filter down onto the work surface through the groove in the pilot.
4. To insure proper cutter lubrication, always make sure that the slot in the pilot is kept clean from residual buildup.

Checking Operation of Cutting Fluid Reservoir

1. With magnetic drill in operating position, turn feed handle 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 more than 30 seconds.

Clutch Disengage Travel Adjustment

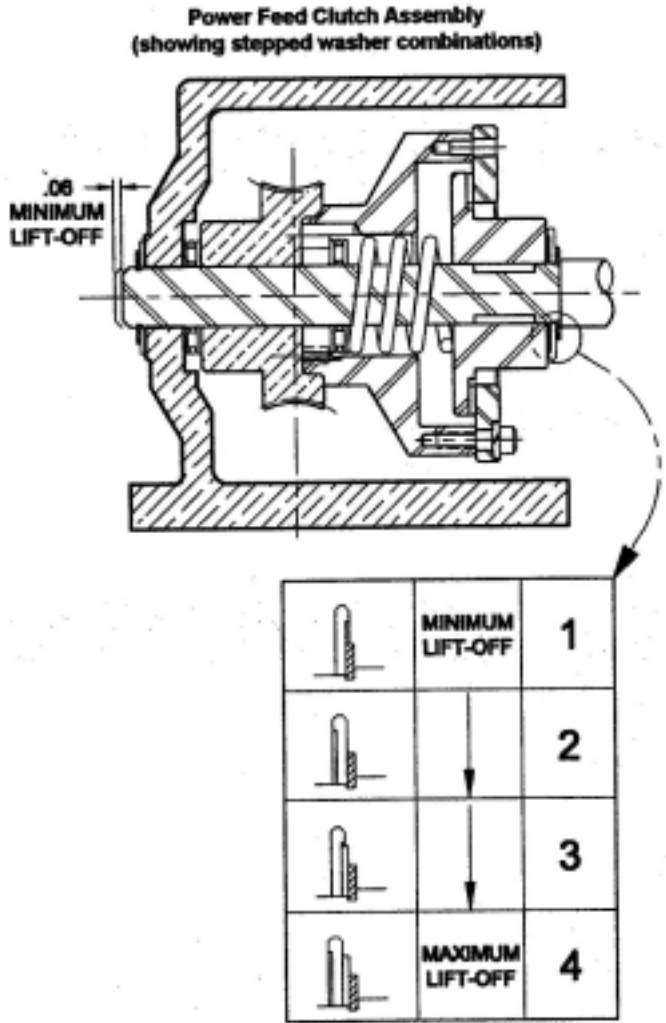
Manufacturing tolerance variations combined with wear factors require the need for variable clutch lift off adjustment. Stepped washer (01134) facilitates (4) fixed adjustments in .015 increments when used in conjunction with thrust washer (40020) located at the end of the shaft at the gear box.

The disengaging lever (01139) mechanism provides over-travel to accommodate the appropriate lift off (not enough stepped washer thickness) will not completely disengage the clutch. A binding will be noticed with manual movement of the slide with clutch disengaged.

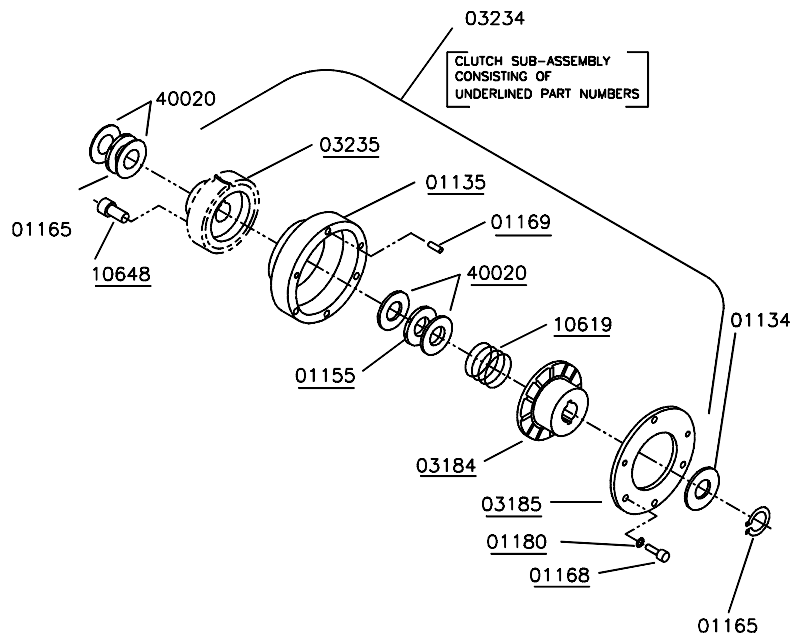
Proper lubrication between the hub (01124) and segmented ring (01140) will reduce or eliminate the need for readjustment from original factory settings by lubricating the unit periodically at grease fitting (10681)

The term "Lift-off" is used to signify the travel of the engagement rod to lift off the clutch -- not including the free-play movement. A minimum of .060 lift off is required to disengage the clutch.

The combined stack heights will allow adjustment in .015 increments to obtain the correct measurements. If the lift-off is inadequate, move to the next thicker stack increment. After the clutch disengages properly, remove the four screws and plate covering the observation window. Check to see if the clutch plate and cover are fully meshed together. If not, move to the next thinner stack increment.

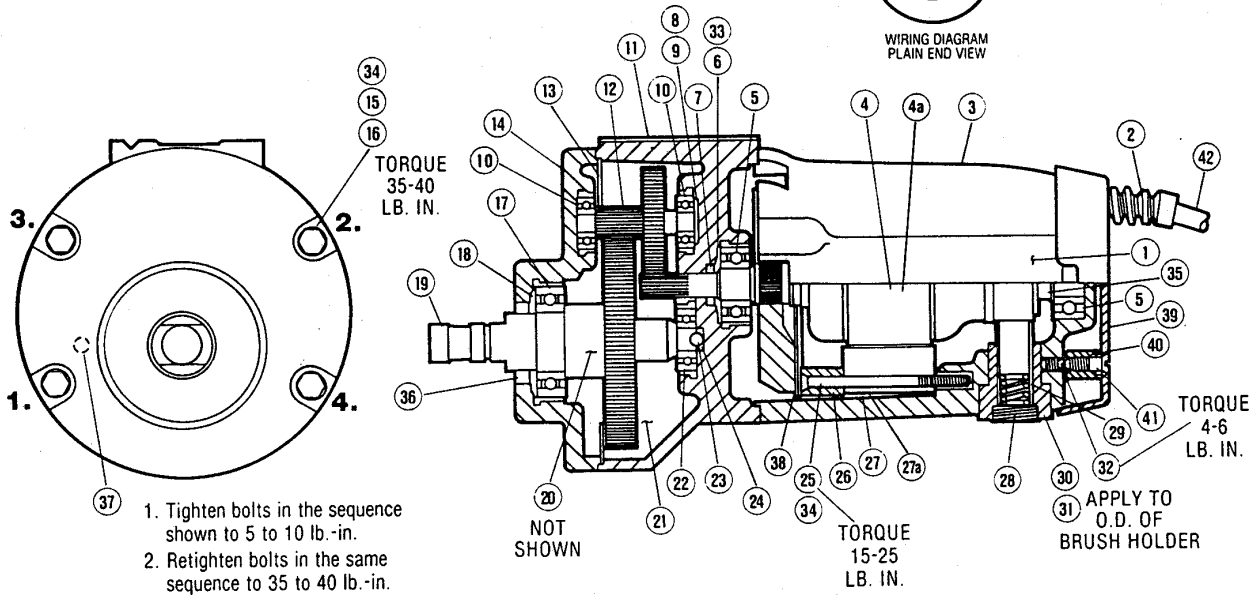
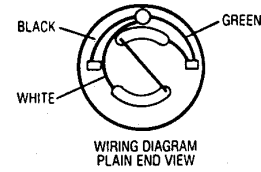


Clutch Assembly



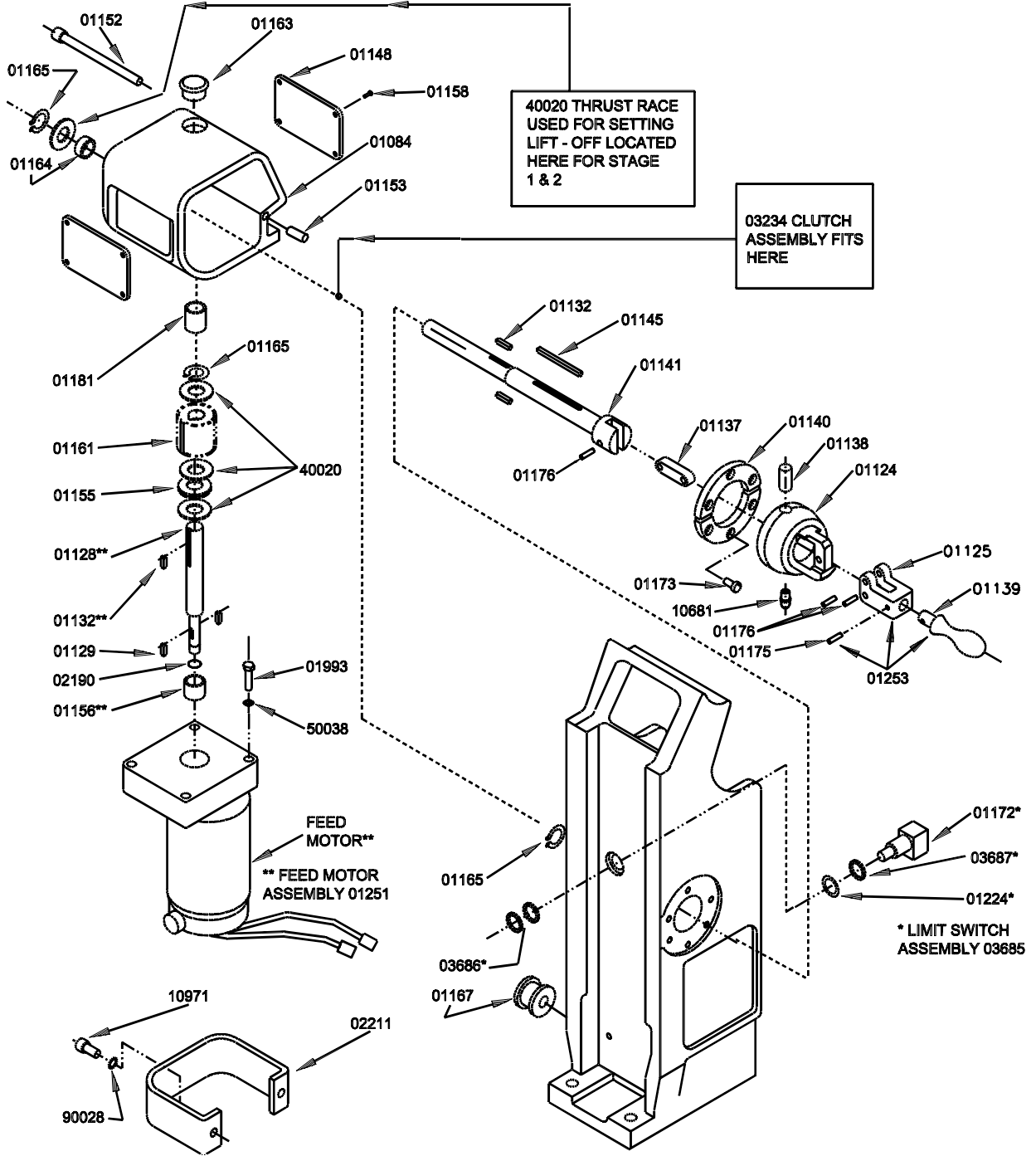
Motor Parts Diagram

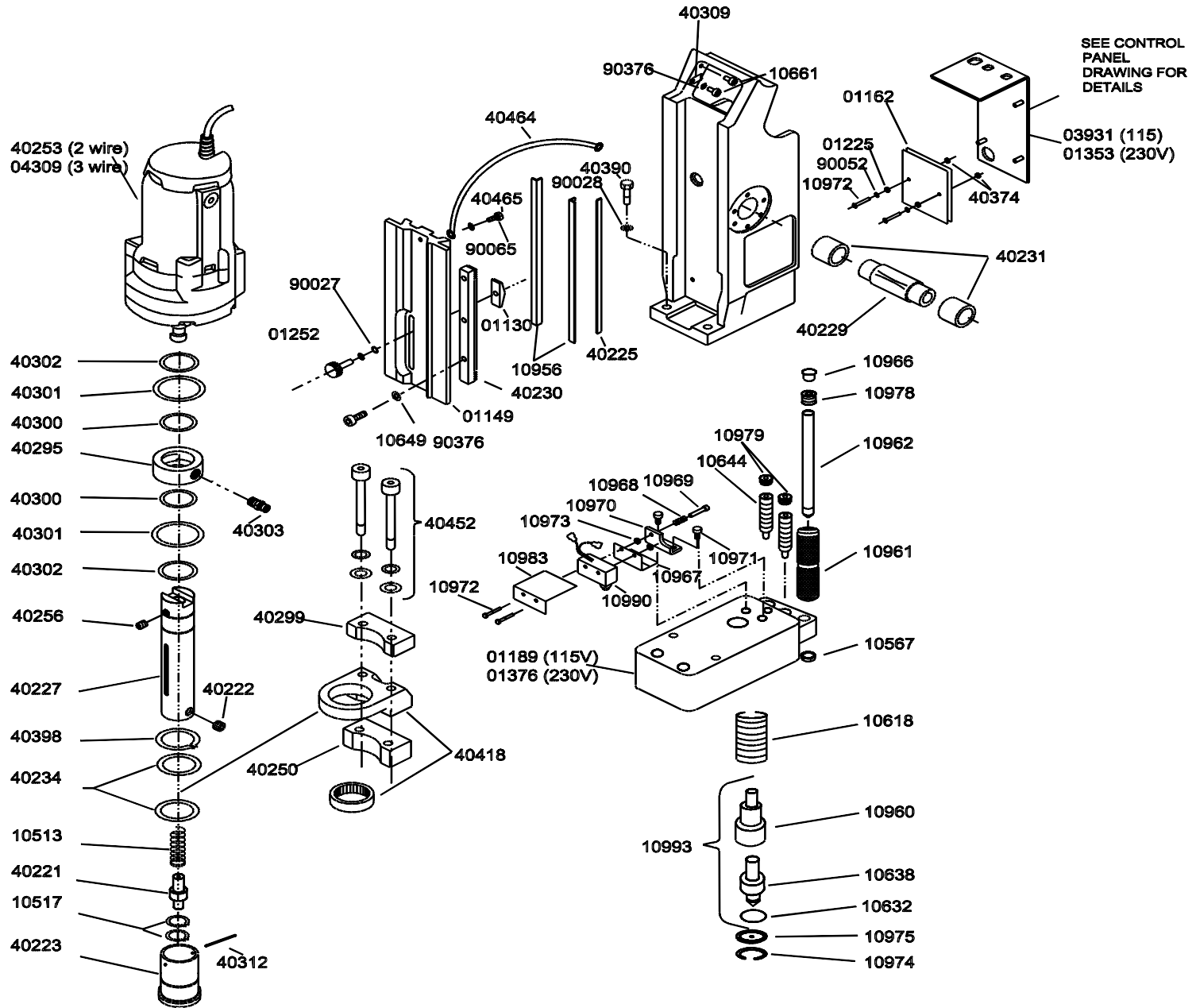
IMPORTANT: DO NOT EXCEED RECOMMENDED TORQUES WHEN TIGHTENING DETAILS 15, 25 AND 32



Detail No.	Part No.	Description	No. Req'd.	Detail No.	Part No.	Description	No. Req'd.
1	40291	Connector	1	25	40383	Screw #10-32	2
2	40445	Strain relief	1	26	40384	Spacer, Baffle	1
3	40260	Housing, Brush End	1	27	40284	Field Assy 115V (2 wire)	1
4	40261	Armature Assy. - 115V	1		04308	Field Assy 115V (3 wire)	1
4a	01087	Armature Assy. - 230V	1	27a	01088	Field Asst 230V	1
5	40262	Bearing	2	28	40285	Brush Plug	2
6	40263	Spring, Flat	1	29	40286	Brush Carbon	2
7	40264	Seal	1	30	40287	Brush Holder	2
8	40265	Spring, Flat	1	31		Loctite 271	
9	40266	Washer	1	32	40289	Screw #10-32 x 1/4"	2
10	40267	Bearing	2	33	40290	Washer	1
11	40268	Housing, Gear	1	34		Loctite 242	
12	40269	Gear, Cluster	1	35	40292	Retaining Ring	1
13	40270	Gasket	1	36	40348	Seal	1
14	40271	Cap, Gear Housing	1	37	40349	Plug	1
15	40298	Screw 1/4-20x 3-1/2	4	38	40382	Baffle	1
16	40273	Lock Washer 1/4"	4	39	40441	End Cap	1
17	40274	Bearing	1	40	40449	Spacer	2
18	40275	Spring, Flat	2	41	40450	Screw #10-32x1"	2
19	40276	Gear, Output	1	42	40258	Motor Cord (2 Wire)	1
20	40277	Pin, Locating	1		04204	Motor Cord (3 Wire)	1
21	40350	Grease, Syntech	8 oz	*	90424	Clip, Brush Holder	2
22	40279	Bearing	1				
23	40280	Ball	1				
24	40281	Slug	1				

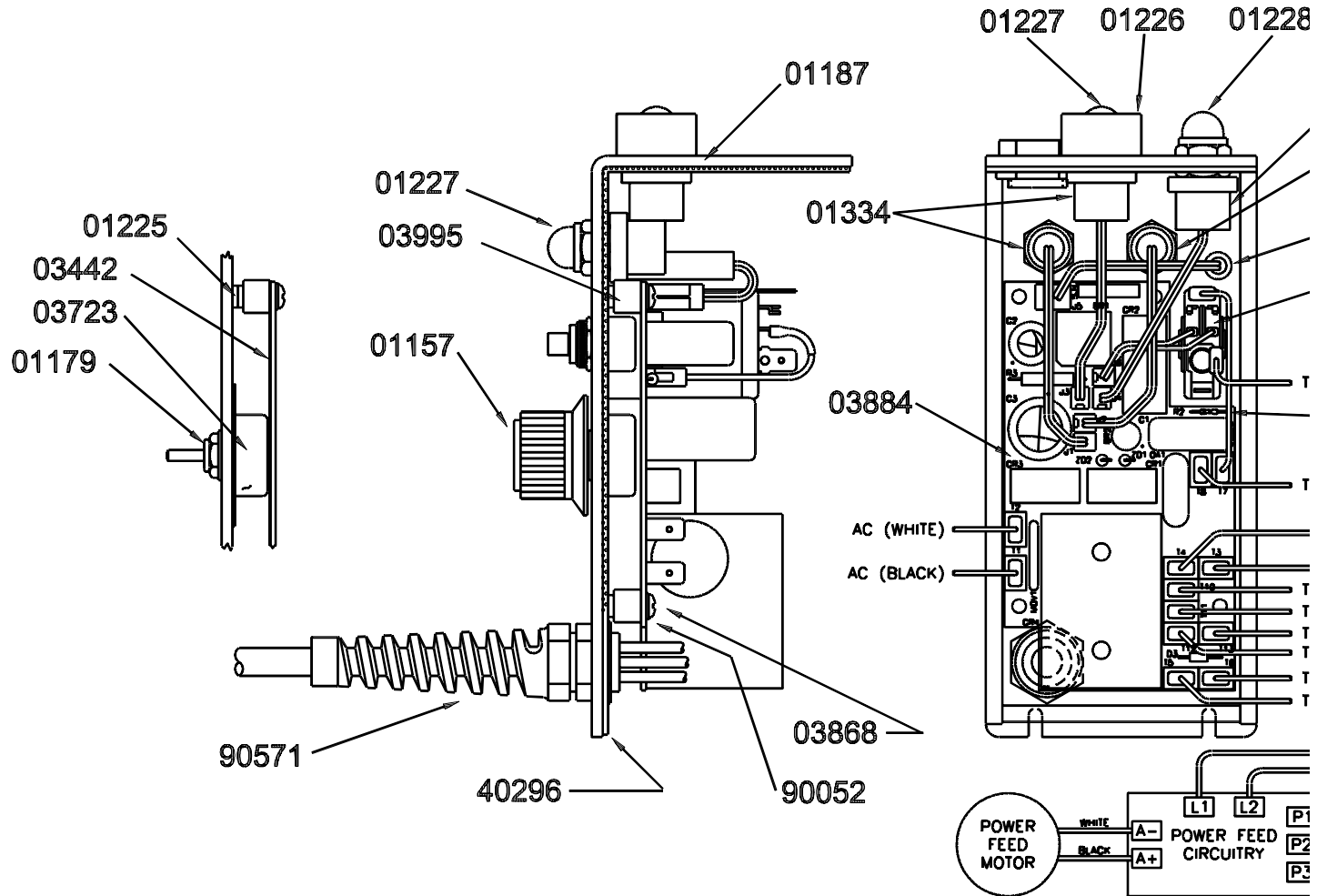
10925 / 10926 Power Feed Assembly



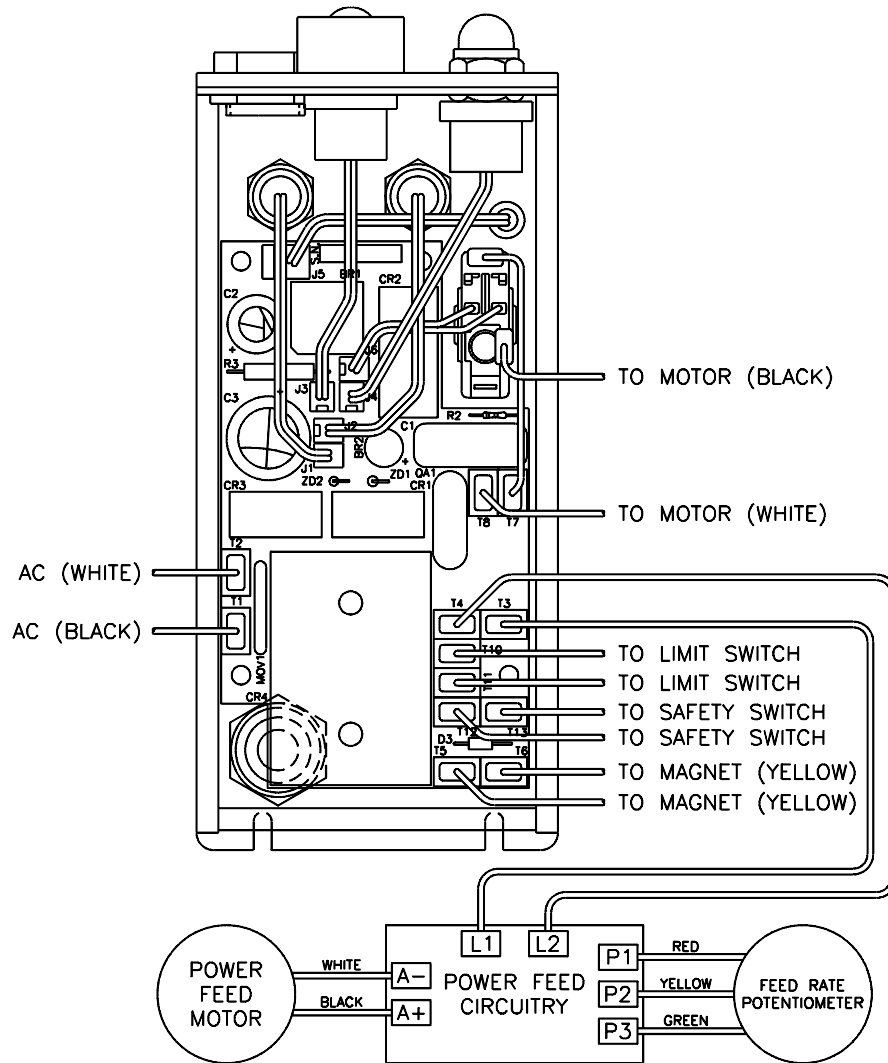


Electrical Panel Layout Diagram

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Electrical Panel Hook-up Diagram



**NOTE: ALL DRILLS BUILT AFTER JUNE 1999 SHOULD HAVE THIS CONFIGURATION. THAT MEANS ANY DRILL WITH A SERIAL NUMBER OF 967001 AND EARLIER WILL NEED PART NUMBER #03937 (REPLAC. KIT)
03937 KIT INCLUDES A CIRCUIT BOARD, CIRCUIT BREAKER, PILOT LIGHT AND THE NECESSARY HARDWARE. DOES NOT REPLACE SWITCHES, FACEPLATE OR POWER CORD.**

Parts Listing

Part No.	Description	Qty. Req'd.	Part No.	Description	Qty. Req'd.
01084	GEAR HOUSING	1	01993	HEX BOLT #10-32 X 3/4	3
01124	HUB	1	02153	POTENTIOMETER	1
01125	LEVER	1	02185	HIGH SPEED GEAR	1
01128	SHAFT P/F MOTOR	1	02186	GEAR INTER HIGH SPEED	1
01129	FEED MOTOR SHAFT KEY	2	02187	OUTPUT GEAR	1
01130	LIMIT SWITCH ACTIVATOR	1	02188	BEARING KIT	2
01132	DRIVE KEY	3	02189	P/F MOTOR SPACERS	1
01134	CLUTCH SPACER	1	02190	RETAINING RING	1
01135	HOUSING CLUTCH P/F	1	02193	HOUSING-ASSY GEAR	1
01137	DISENGAGE LINKAGE	1	02194	COVER-GEAR HSNG. ASSY.	1
01138	HUB DRIVE PIN	1	02195	SCR_TORX #6-32	4
01139	DISENGAGE LVR. HANDLE	1	02196	SCR-TORX #10-32	4
01140	HUB LOC. RING SEGMENT	2	02197	PLUG-BRUSH HOLDER	2
01141	ENGAGEMENT ROD	1	02198	MOTOR HOUSING COVER	1
01145	KEY	1	02199	HOUSING MOTOR STATOR	1
01148	GEARBOX COVER PLATE	2	02200	ARMATURE ASSEMBLY	1
01149	SLIDE MOTOR MOUNT	1	02201	BRUSH ASSEMBLY P/F	2
01152	SCREW SHC 1/4-20 X 3-1/4	4	02211	BRACKET	1
01153	DOWEL PIN .1877 X .5	1	03184	CLUTCH PLATE P/F	1
01155	THRUST BEARING	3	03185	CLUTCH COVER P/F	1
01156	BRONZE BUSHING	1	03234	CLUTCH ASSY REPLAC.	1
01157	POTENTIOMETER KNOB	1	03235	WORM GEAR	1
01158	SCR. BUTTON HEAD #4-40	8	03442	PC BOARD INSULATOR	1
01162	SPEED CONTROL BOARD	1	03685	SWITCH ASSY.	1
01163	GEARBOX PLUG	1	03721	JUMPER CIRCUIT BOARD	1
01164	BEARING SLEEVE	1	03723	POTENTIOMETER ASSY.	1
01165	RETAINING RING	2	03857	SCR-HEX HEAD #4-40	4
01167	GROMMET	1	03868	PAN-SCREW	4
01168	DOWEL PIN .125	2	03880	PILOT LIGHT ASSY.	1
01169	DOWEL PIN .1252 X .38	2	03884	CIRCUIT BOARD REPLAC.	1
01171	NUT HEX 3/8-32	1	03931	CONTROL PANEL ASSY.	1
01172	PUSH BUTTON SWITCH	1	03937	CIRCUIT BD. ASSY REPLAC.	1
01173	SCREW LOW SOC HEAD	6	03995	VIBRATION MOUNT	4
01175	ROLL PIN	1	04204	MOTOR CORD (3WIRE)	1
01176	ROLL PIN	3	04308	FIELD ASSY. 115V (3 WIRE)	1
01179	"O" RING	1	04309	REP. MOTOR CORD (3 WIRE)	1
01180	HELI LOCKWASHER #8	6	10513	ARBOR SPRING	1
01181	SLEEVE BEARING	1	10517	RETAINING RING	2
01189	MAGNET ASSEMBLY	1	10567	JAMB NUT	1
01224	SWITCH LOCKING RING	1	10569	FEED HANDLE	3
01225	P/F CIRC BOARD SPACER	2	10570	KNOB	3
01226	PUSHBUTTON GUARD	1	10618	S/S COMP. SPRING	1
01227	SWITCH SEAL GREY/BLK	2	10619	SPRING	1
01228	SWITCH SEAL RED	2	10632	RETAINING RING	1
01251	P/F MOTOR ASSY.	1	10638	S/S BEARING ASSY.	1
01252	KNOB SCREW 1/4-20 X 3/4	1	10644	GLIDE POST	2
01253	LEVER HANDLE ASSY.	1	10648	SCREW S/H #10-32- 1/2	3
01257	DRILL HOUSING ASSY.	1	10649	SCREW SHC #10-32	2
01334	SWITCH ASSY. ON	2	10661	SCREW BHC #10-24	2
01335	SWITCH ASSY. OFF	2	10681	GREASE FITTING	1
01343	P/F CONTROL BOARD 230V	1	10956	BRASS BIGS (PAIR)	1
01353	CONTROL PANEL ASSY. 230V	1	10960	PLUNGER BODY	1
01376	MAGNET ASSY 230V	1	10961	SLIDE HAMMER	1

Parts Listing

PART NO.	DESCRIPTION	QTY. REQ'D.	Part No.	Description	Qty. Req'd.
10962	IMPACTOR	1	40419	TAB-RET RIGHT	1
10966	DUST CAP	1	40420	TAB-RET LEFT	1
10967	M/S MOUNT SPRING	1	40422	CLAMP HOSE 6"	1
10968	M/S ADJUST SPRING	1	40424	FINGER ANTI-ROTATE	1
10969	M/S ADJUST SCREW	1	40429	NUT LOCKING 1/8 NPT	1
10970	S/S ADJUST BRACKET	1	40433	CAP ASSEMBLY	1
10971	SCREW SHC 1/4-20 X 1/2	2	40439	TUBE CUTTING FLUID	1
10972	SCREW B/H #6-32 X 7/8	2	40442	COOLANT BOTTLE ASSY	1
10973	NYLON NUT #6-32	2	40452	3/8" BOLT KIT FSB	1
10974	RET RING	1	40464	GROUND STRAP	1
10975	PIVOT POINT SEAL	1	40465	1/4-20 X 1/2 BOLT	1
10977	BHS 1/4-20	1	40650	MOTOR REPLAC. 230V	1
10978	BHS 5/16-24 X 3/8	1	50035	WASHER LOCK 1/4" INT	2
10979	GLIDE POST LOCK SCREW	2	50038	HELI LOCK WASHER	3
10983	M/S INSULATING SHIELD	1	51042	SCREW SHC 1/4-20 X 3/8	2
10990	MICROSWITCH ASSY.	1	90027	FLAT WASHER 1/4	1
10993	S/S PIVOT ASSY	1	90028	HELI LOCK WASHER	6
40020	THRUST RACE	8	90052	LOCK WASHER EXT #6	2
40221	SPRING SEAT	1	90065	1/4" STAR WASHER	2
40222	SET SCR 7/16-14	2	90352	SCREW SHC 1/4-28 X 1	4
40223	EJECTOR COLLAR	1	90356	#10 INT WASHER	3
40225	STEEL GIB	1			
40227	ARBOR BODY	1			
40229	FEED GEAR	1			
40230	GEAR RACK	1			
40231	BRONZE BUSHING	2			
40234	THRUST WASHER	2			
40237	SET SCR 1/4-28 X 1/2 DOG	5			
40250	SPACER 1" FSB	1			
40253	REPLAC. MOTOR (2) WIRE	1			
40255	WARNING TAG	1			
40256	SET SCR 5/16-18 X 3/8	1			
40294	MOTOR MOUNT SLIDE	1			
40295	INDUCER RING	1			
40297	SCR BHC #6-32 X 1/2	4			
40299	SPACER 3/4" BLOCK	1			
40300	"O" RING	2			
40301	THRUST WASHER	2			
40302	RETAINING RING	2			
40303	FITTING	1			
40309	CORD CLAMP	1			
40312	ROLL PIN	1			
40326	CUTTING FLUID VALVE	1			
40332	INDUCER ASSY.	1			
40333	BRASS INSERT	1			
40338	FERRULE FOR 1/4" OD	1			
40374	HEX NUT #6-32	1			
40390	HEX BOLTS 1/4-20 X 1"	3			
40391	WASHER LOCK 3/8"	2			
40392	WASHER FLAT 3/8"	2			
40398	RETAINING RING	1			
40417	COOLANT BOTTLE	1			
40418	FRONT SUPPORT BRACKET	1			

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Hougen Drills (Rotabroach Cutters) are warranted against manufacturing defects only. Subject to Hougen Manufacturing inspection.

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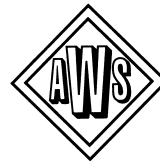
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Hougen Manufacturing, Inc
3001 Hougen Drive
Swartz Creek, MI 48473

Tele: (810) 635-7111
Fax: (810) 635-8277
Online: www.hougen.com
E-mail: hougenco.@tir.com