

# MAGNUM ELITE SERIES

**HIGH PERFORMANCE ROUTERS  
OPERATION & MAINTENANCE**

**Diarex Magnum Stone Routers-  
The Most Powerful Routers Available!**





# **MAGNUM by Diarex<sup>®</sup>**

## **High Performance Routers**

### **Operation and Maintenance Manual**

#### **Disclaimer**

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## Magnum Elite Series Upgrades (Both models)

- Now contains a fan-less motor, fully shielded cover, and pre-loaded bearings, making the Elite Series unbelievably quiet.
- The first 5 feet of the power cord coming from the router is wrapped with a nylon braided sheath to help protect against damage caused by sharp stone edges, dropped tools, and other shop or job site hazards.
- We've doubled the amount of loc-line to enable the consumer to run coolant on the tooling from any angle.
- Powder coated stainless steel wrap around handle to stop rust.
- Higher grade steel is used to manufacture the spindle shaft and motor pulley to ensure part longevity, even when constant tool changes occur.
- The hydroplane plate's sliding surface is now made with a high-density plastic for a more rigid, friction resistant cut. The plastic is easily replaceable and VERY cost friendly.
- Packaged in a high strength, lockable plastic tool box with wheels and a telescoping handle for ultimate protection and ease during transit.

## Magnum Elite Series Upgrades (Magnum 3 only)

- We've replaced the individual Start/Stop and E-stop switches with a power On/Off tactile membrane switch. This switch is rated to last 10,000 cycles, vastly outperforming the original buttons. It also has LED indicator lights for when the router is powered up and for when it is running.

## Magnum Elite Series Upgrades (Magnum 5 only)

- The variable speed drive is now located inside the router along with all other electrical components, meaning there is no more bulky electrical cabinet needed to run the Magnum 5, making it the EXACT SAME PHYSICAL SIZE AS THE MAGNUM 3.
- With the VFD now located inside the cutting unit, there is a different approach we've taken to ensure personnel safety; a detachable (single phase 20A 220VAC) GFCI. (Three phase 30A 220VAC available and sold separately).
- The Magnum 5 Elite Series router has a similar tactile membrane switch to the Magnum 3 Elite Series, but with the added benefit of a speed increase and a speed decrease button. The Magnum 5 still has a speed threshold of 2400-9500 RPM.
- Attached to the new switch plate is a tougher, more water-resistant tachometer with a larger, brighter display than its original or 2.0 predecessors.

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# Chapter 1--Introduction and Safety

## Definition of Symbols

### *Safety Symbols*

These symbols are printed beside all safety instructions contained in this manual, where potential danger to life and limb is indicated. Particular attention must be paid to these instructions and personnel are to exercise extreme caution at all times. All users/operators must be fully informed of operational safety instructions.

### *Warning Code Symbols*

Keyword	Application
	<b>DANGER</b> indicates an imminently hazardous situation which, if not avoided, <i>will</i> result in death or serious injury.
	<b>WARNING</b> indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	<b>CAUTION</b> indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or may result in damage to the machine.

## Basic Safety

This machine has been designed to be as safe as possible for the operators. However, since even well-built machines can be installed or operated in a hazardous manner, it is important that safety considerations be observed by the users. Safety shields *must* be in place whenever the machine is operated, and eye protection must always be worn. Care should be exercised as to where hands and tools are placed when the machine is operational. Before attempting to perform any service to the machine, make *certain* that all power is disconnected from the machine.

If there are any questions, it is suggested that you contact GranQuartz before using this equipment.

**⚠ WARNING** Do not operate the machine with any of the guards removed. Always use approved eye protection!

## Warranty and Liability

Each machine contains a serial number, located on the identification plate at the rear of the machine. It is necessary to convey this number to GranQuartz in any communications regarding this machine.

The Magnum router is warranted for a period of 90 days for electrical components and six months for mechanical components.

## Safe Operation of the Machine

**⚠ WARNING** Do not operate the machine with power sources other than that specified.

**⚠ WARNING** Do not use hazardous materials which may affect the health of the operating personnel.

**⚠ WARNING** Do not operate a modified or unsafe machine.



This manual must be retained and placed near the machine, where it can be readily consulted.

Operate the machine only:

- If this operating manual has been completely read and understood
- In accordance with all operational and safety instructions specified in this manual
- With all safety guards in place
- With approved eye protection


**⚠ DANGER** Do not wear long unbound hair, loose clothing, jewelry, rings, or any other item that can be caught by the rotating parts of the machine.




## Electrical/Electronic Installation

### **DANGER** DANGER OF DEATH!

There is danger to life from contact with fuses or parts carrying live current. Before carrying out work on electrical components, the machine must be disconnected from any power source. This can be done by unplugging the machine.

 **DANGER** Defective electrical parts can be deadly. The machine must not be used in a defective condition.

 **DANGER** Work on electrical installations must only be carried out by a skilled electrician in accordance with local laws and regulations.

### *Important Safety Rules*

1. Inspect the machine regularly and immediately repair any defects or faults.
2. **Any electrical defects found must be repaired immediately.** The machine must not be used in a defective condition.
3. Remove the machine from any electrical power before servicing.

## Chapter 2--Installation and Connections

### Unpacking

Carefully unpack the machine and check it for damage in shipment.

Contents:

- Operating Head
- Operation and Maintenance Manual
- One Spindle Wrench
- One 1/4" Hex Wrench

Check for any damage that may have occurred in shipping.

The Magnum Elite is packaged in a hard plastic rolling tool case which can be used for machine storage and transport.



## Specifications

### *Electrical Requirements*

**Magnum 3**    120 volts, single phase, 20 amps

**Magnum 5**    208/240 volts, single phase, 24 amps

### **DANGER**

Installation of the Magnum 5 **MUST** be carried out by a qualified licensed electrician.

### *Water Requirements*

#### **Water Supply and Fitting:**

The Magnum routers are made to connect to a standard “garden hose” for their water supply. This water is used for tool cooling and debris removal, and through the water plate under the machine, to provide lower-friction contact with the work surface.

A supply of 15 gallons per minute is required.

#### **Water Drain:**

The work environment must have a suitable drain for capturing the water from the Magnum router’s spray nozzles.

## Connection of Electrical Power

### Magnum 3

The Magnum 3 plugs into a grounded outlet supplying the voltage and current specified on page 7. If an extension cord must be used, it must be capable of handling the power specified (extension cord must be 10 gauge wire or heavier and a maximum length of 25 feet). Ensure that the electrical plug of the Magnum is protected from water splashes.

### Magnum 5

See the electrical wiring diagrams in Chapter 5 for the connection specifications. Ensure that the available voltage and current is in accordance with the specifications on page 7. Grounding must be performed in accordance with the rules of the local power supply company.

## Connection to the Water Supply

Connect the machine's hose hookup to a suitable hose, supplying clean water.

Note that once the main supply is on, if the master shut-off valve (located at the end of the hose on the rear of the machine) is open, water will start flowing out from the water plate under the machine and through the nozzles.



## Chapter 3--Router Description

### Functional Description

The Magnum routers are designed for the shaping and polishing of edges on flat stone surfaces. They are designed for professional use only, by operators who have read this instruction manual, and who are trained and experienced in the stone grinding process. The Magnum routers must not be used for any purpose other than that specified above.

The Magnum router requires tools which must be purchased separately. The use of tools provided by GranQuartz is recommended.

There are two models of routers:

- The Magnum 3 has a single-phase motor, which rotates the grinding tool clockwise (when viewed from above) at a constant speed of approximately 8500 rpm. The Magnum 3 connects to electrical power by plugging its GFI-equipped plug into a standard grounded outlet.
- The Magnum 5 has a three-phase motor, which rotates the grinding tool clockwise (when viewed from above) at an operator-selected speed, ranging from 2400 rpm. to approximately 9500 rpm. The Magnum 5 has a speed controller located in front of the motor, which converts single-phase power into three-phase power to run the motor.

Other than speed controls, both routers operate similarly, with a tactile Power On/Off switch. Both use a belt-driven spindle to hold the grinding tools, both rest on a UHMW hydroplane plate, and both feature dual water nozzles to cool/clean the grinding tool.

## Magnum Operating Head Terms



## Chapter 4--Router Operation

### Safety

#### **WARNING**

#### **DANGER OF BEING INJURED**

The machine is a source of danger if it is operated improperly or not properly maintained.

Do not operate the machine in an unsafe manner!

Do not start the machine without safety guards or if it is defective.

#### **WARNING**

Hearing protection may be required for machine operators, depending on operating conditions and plant regulations.

*Eye protection is always required.*

#### **WARNING**

Test the GFI (Ground Fault Interrupter) prior to every use.

Push the TEST button on the electrical cord. The RESET button will pop out if the GFI is working properly—press the RESET button back in. *If the RESET button does not pop out when the TEST button is pushed, do not use the machine!*

#### **WARNING**

The tool must be placed and operated so that it will not fall off the operating surface. The electrical power cable and water supply hose must not hinder the movement and use of the machine.



## Machine Controls

Magnum 3



Magnum 5



## Back Handle Positions

The handle at the back of the machine can be installed in one of three positions. Use the position you find most comfortable.



## Starting the Machine



Observe all of the safety instructions in Chapter 1. (pages 1-4)

- Step 1.** Check the machine for cleanliness and ensure the tool is installed correctly.
- Step 2.** For the Magnum 3, test the Ground Fault Interrupter (GFI). (See page 11)  
For the Magnum 5, press the Reset button on the GFI.
- Step 3.** Inspect the safety guard for proper installation.
- Step 4.** Wear the proper eye and hearing protection as required by workplace conditions and requirements.
- Step 5.** Make sure the router's spindle is free and clear and that obstacles are not resting on the table.
- Step 6.** Install the back handle in the preferred mounting hole.
- Step 7.** Make sure the master water supply valve (located on the machine hose assembly) is closed.
- Step 8.** Turn on the water supply.
- Step 9.** Turn on the two water valves that control water to the nozzles. Direct the nozzles as desired. *Do not aim up at the cover above the grinding tool.*
- Step 10.** Turn on the motor by pressing the Power On/Off switch.
- Step 11.** For the Magnum 5 only, select the desired speed by pressing the orange speed control until the tachometer reads the desired RPM. (The Magnum 5 always starts at the lowest speed.)  
The Magnum 3 operates at approximately 8500 RPM. The maximum speed of the Magnum 5 is approximately 9500 RPM.

## Shutting Down the Machine

**Step 1.** Turn off the motor by pressing the Power On/Off switch.

**⚠ WARNING** It will take a few seconds for the tool to stop rotating.

**Keep your hands away from any moving parts until the machine has completely stopped.**

**Step 2.** Turn off the two water valves that control water to the nozzles.

**Step 3.** Turn off the water supply.

## Tool Height Adjustment

**⚠ CAUTION** Adjust the tool height only while the machine is running. Otherwise, belt stretching and/or belt breakage will occur.

- Step 1.** With the motor running, loosen both the Primary *and* Secondary Spindle Locks.
- Step 2.** Turn the adjustment knob clockwise to raise the tooling, or counter-clockwise to lower the tooling.
- Step 3.** Re-tighten both Spindle Locks.

### Spindle (Tool Height) Adjustment Knob

**⚠ CAUTION** *Turn only when running!*  
Otherwise, you may stretch or damage the belt!

### Secondary Spindle Lock

Tighten to add protection against vertical spindle movement

--Loosen before adjusting tool height

**⚠ CAUTION** *Do not forget to re-tighten!*

### Primary Spindle Lock

--Loosen before adjusting tool height

**⚠ CAUTION** *Do not forget to re-tighten!*



## Grinding Tool Change



**WARNING** Change the grinding tool only while the machine is off and disconnected from power.

- Step 1.** Disconnect the power from the machine.
- Step 2.** Tip the machine back on the handle, with the grinding tool facing you.
- Step 3.** Place the included spindle wrench on the nut behind (under) the grinding tool.
- Step 4.** Use a hex wrench (the size may vary) to loosen the tool.
- Step 5.** Remove the tool.
- Step 6.** Clean the shaft and tapped hole as necessary.

Reverse the above instructions to install the new grinding tool.



**Spindle Wrench**

**1/4" Hex Wrench**





## Chapter 5--Maintenance

**⚠ DANGER** Work on electrical equipment may only be performed by a skilled electrician, or by trained personnel under the supervision of a skilled electrician, and in compliance with the rules of electrical engineering.

### Preparations for Maintenance

- Disconnect the machine's main electrical power and secure it against activation.
- Disconnect the water supply.

### Lubrication

There are no parts requiring lubrication.



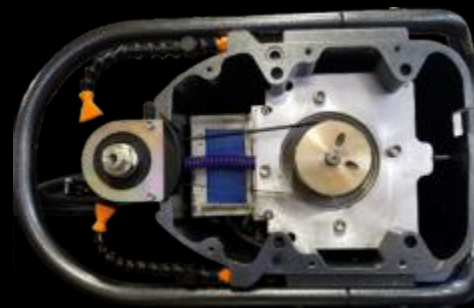
## Belt Replacement

1. Turn the knob located at the back of the machine clockwise to release the current belt.



2. Ease the machine to its side.

3. Remove the hydro plate and belt guard.



4. Replace the belt as well as the guard and hydro plate *IN THAT ORDER*.

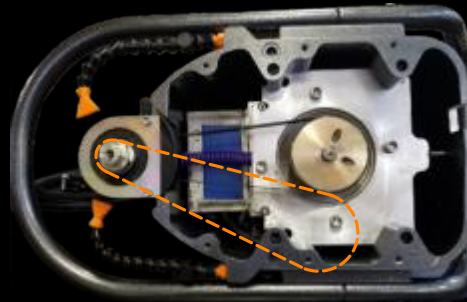
5. Turn the back knob counter-clockwise to bring tension to the new belt.



## Spindle Replacement

1. Follow Steps 1 and 2 from the [Belt Replacement](#) section on Page 21.

2. Remove the hydro plate and remove the belt from around the motor pulley. Then, carefully tip the router back up.



3. Loosen the front palm grip knob and the bolts on either side of it, then slide the clear guard forward.



4. Remove the four 5/16" bolts holding the the spindle in place, slide the spindle out.



5. Reverse Steps 1-4 to replace.

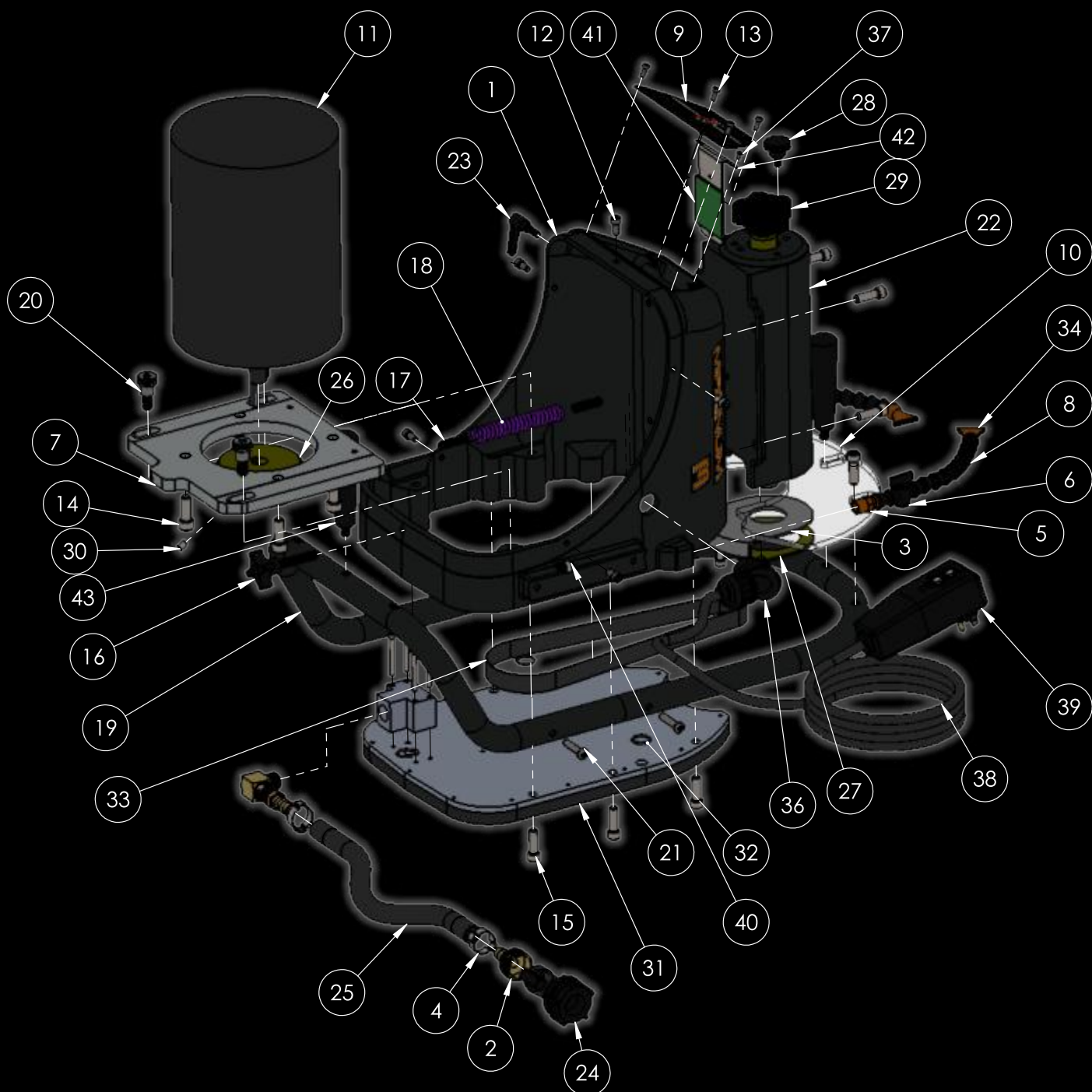
The diagram illustrates a motor control circuit. At the top, a **SWITCH PLATE** is connected to a **RELAY/CIRCUIT BOARD**. The relay board features a **T1 120 VAC INPUT** section with three terminals (white, black, green) and a **T2 MOTOR OUTPUT** section with three terminals (green, black, white). A **BARRIER BLOCK** is connected to the relay board and a **MOTOR**. The motor is represented by a large circle. The circuit is powered by a **LINE** (indicated by a bracket on the right). The wiring is color-coded: green for the main power line, black for the control line, and white for the ground line. The relay board also has a terminal block on the right side with four terminals (white, black, green, white) and a terminal block on the left side with three terminals (white, black, green).

## Magnum 3 Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY
1	104633	CASTING	1
2	70051	HOSE SWIVEL	1
3	70089	SPINDLE GUARD	1
4	70050	CLAMP	2
5	70048	1/4" NPT TO LOC-LINE FITTING	2
6	70432	LOC-LINE VALVE, 1/4"	2
7	104509	MOTOR PLATE	1
8	70047	1/4" LOC-LINE	20
9	104649	MAG 3 SWITCH PLATE	1
10	104635.2	CLEAR GUARD	1
11	70011	MAG 3 MOTOR	1
12	71007-03	1/4-20 BOLT	8
13	71067-02	8/32 SOCKET BOLT	4
14	71018-06	3/8 BOLT	4
15	71003-07	5/16 BOLT	12
16	70428	BELT DE-TENSION KNOB	1
17	71022-20	5/16-18 X 1.125 STUD	2
18	70427	BELT TENSION SPRING	1
19	104634	HANDLE	1
20	71000-01	SHOULDER BOLT	3
21	71000.02	1/4-20 HANDLE SCREW	4
22	104620.2	SPINDLE ASSEMBLY	1
23	70037	SPINDLE LOCK LEVER	1
24	70040	WATER VALVE	1
25	70070.2	HOSE 1'	1
26	104510	MOTOR PULLEY	1
27	80083	SPINDLE GUARD SUPPORT	1
28	70423	KNURLED TOP KNOB	1
29	70066	STAR KNOB	1
30	71006-04	1/4-20 SET SCREW	2
31	70144.3	HYDROPLANE PLATE	1
32	70155	O-RING	3
33	110008.3	25.5" BELT	1
34	70049	FLARE NOZZLE	2
35	104629.3	COVER	1
36	70010.3	WIRE STRAIN RELIEF	1
37	71067-04	6-32 BUTTON HEAD BOLT	2
38	70382	GFI CORD 25'	1
39	70009	GFI HEAD	1
40	70305	3/8" CABLE CLAMP	1
41	70094.1	RELAY/CIRCUIT BOARD	1
42	70424	RELAY MOUNTING TAB	1
43	104609	PALM GRIP KNOB	2

## Magnum 3 Parts Illustration

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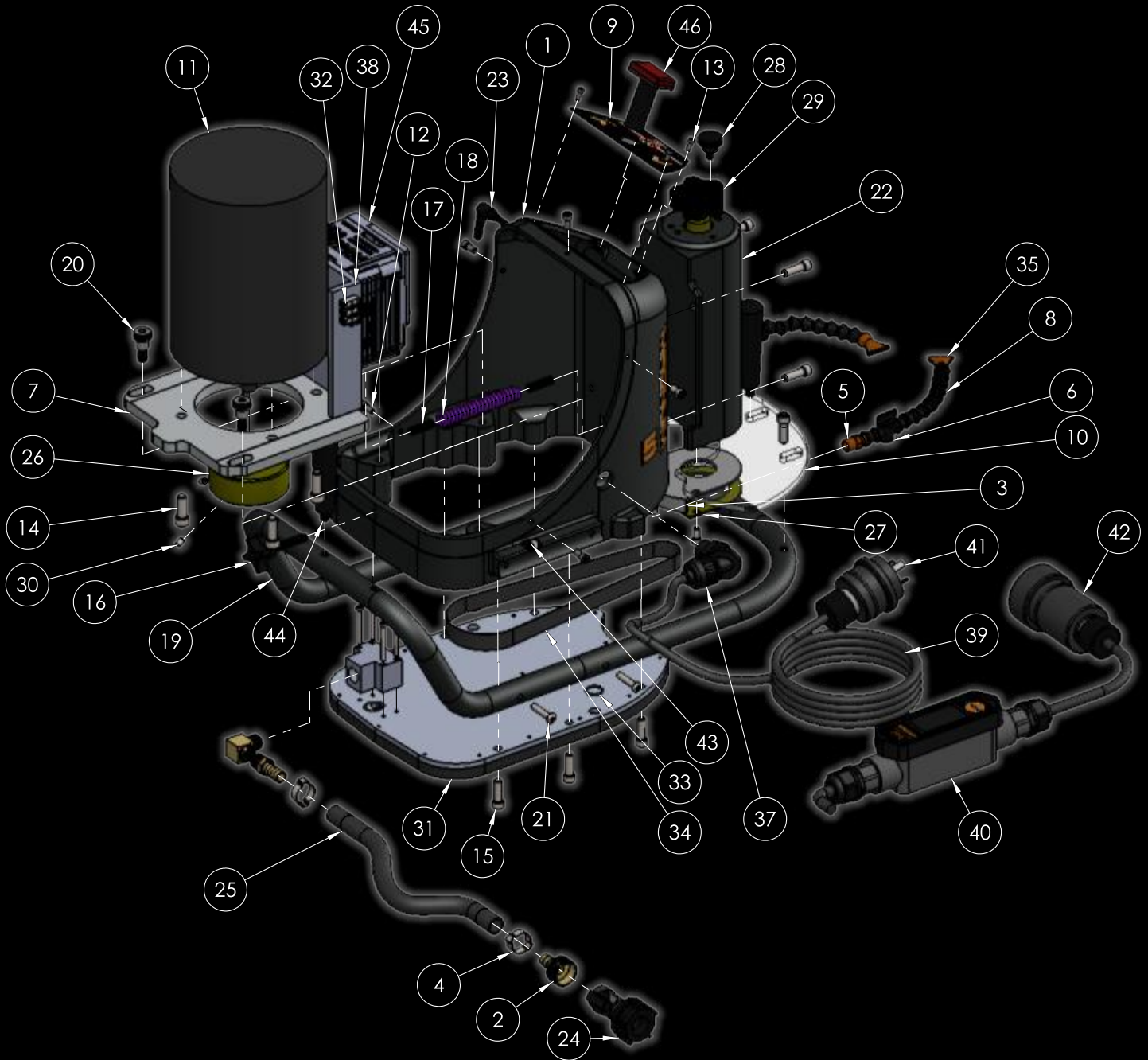


## Magnum 5 Parts List

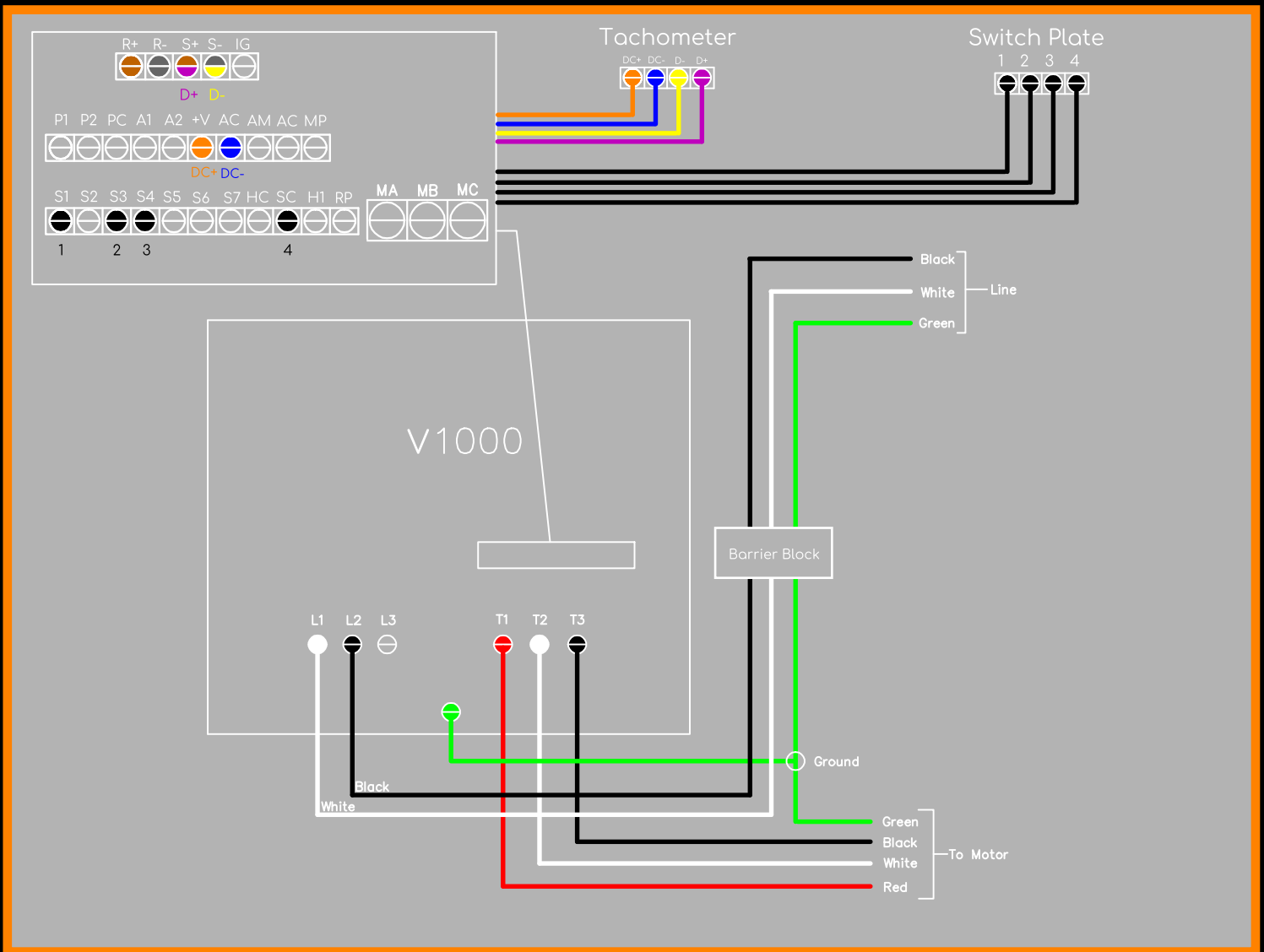
ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY
1	104633	CASTING	1
2	70051	HOSE SWIVEL	1
3	70089	SPINDLE GUARD	1
4	70050	CLAMP	2
5	70048	1/4" NPT TO LOC-LINE FITTING	2
6	70432	LOC-LINE VALVE, 1/4"	2
7	104509	MOTOR PLATE	1
8	70047	1/4" LOC-LINE	20
9	104651	MAG 5 SWITCH PLATE	1
10	104635.2	CLEAR GUARD	1
11	70024	MAG 5 MOTOR	1
12	71007-03	1/4-20 BOLT	8
13	71067-02	8/32 SOCKET BOLT	4
14	71018-06	3/8 BOLT	4
15	71003-07	5/16 BOLT	12
16	70428	BELT DE-TENSION KNOB	1
17	71022-20	5/16-18 X 1.125 STUD	2
18	70427	BELT TENSION SPRING	1
19	104634	HANDLE	1
20	71000-01	SHOULDER BOLT	3
21	71000.02	1/4-20 HANDLE SCREW	4
22	104620.2	SPINDLE ASSEMBLY	1
23	70037	SPINDLE LOCK LEVER	1
24	70040	WATER VALVE	1
25	70070.2	HOSE 1'	1
26	104510	MOTOR PULLEY	1
27	80083	SPINDLE GUARD SUPPORT	1
28	70423	KNURLED TOP KNOB	1
29	70066	STAR KNOB	1
30	71006-04	1/4-20 SET SCREW	2
31	70144.3	HYDROPLANE PLATE	1
32	70444	EUROSTYLE TERMINAL STRIP CONNECTOR	1
33	70155	O-RING	3
34	110008.3	25.5" BELT	1
35	70049	FLARE NOZZLE	2
36	104629.3	COVER	1
37	70010.3	WIRE STRAIN RELIEF	1
38	70028	V1000 HEAT SINK	1
39	70382	GFI CORD 25'	1
40	70009.3	20A 250V GFCI	1
41	70455	WATERTIGHT PLUG	1
42	70454	WATERTIGHT RECEPTACLE	1
43	70305	3/8" CABLE CLAMP	1
44	104609	PALM GRIP KNOB	2
45	70021	V1000 DRIVE	1
46	70025	TACHOMETER	1

## Magnum 5 Parts Illustration

**P/N: 104629.3 (COVER) NOT SHOWN**



## Magnum 5 Wiring Diagram



### Notes:

HC and H1 are jumpered with a black wire.

R+ and S+ are jumpered with a brown wire.

R- and S- are jumpered with a gray wire.



## Notes

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## Notes

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

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