MODEL T34438
2 HP WATER-COOLED SPINDLE KIT FOR G0403
INSTRUCTIONS

For questions or help with this product contact Tech Support at (570) 546-9663 or techsupport@grizzly.com

Introduction

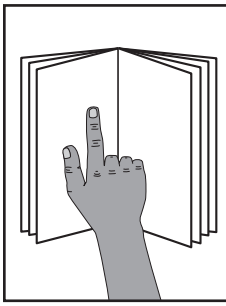
The Model T34438 2 HP Water-Cooled Spindle Kit is designed for use on the G0403 Benchtop CNC Router. The spindle motor featured in the kit uses a continuous flow of water to efficiently dissipate heat, and is compatible with the DSP-J2 control system included in the Model G0403.

Figure 1. T34438 2 HP Water-Cooled Spindle Kit.

Specifications

Spindle Motor:

Model	GDZ-80-1.5B
Type	Induction
Horsepower	2 HP
Power Requirement	110V, 3-Ph, 400 Hz
Amps	5A
Speed	0 - 24,000 RPM
Number of Speeds	Variable
Power Transfer	Direct
Collet Type	ER11



⚠WARNING

To reduce your risk of serious injury, read this entire manual and all other safety and operation information in the G0403 owner's manual BEFORE using this kit.

Inventory

	Description	Qty
A.	Spindle Motor w/Tubing & Cord	1
B.	VFD Mokweir MK100 100V–110V	1
C.	Dust Shoe	1
D.	Spindle Motor Clamp 80mm	1
E.	Water Reservoir	1
F.	Cooling Pump w/Tubing	1
G.	Cap Screws M8-1.25 x 90 (PT34438014)	4

Figure 2. Inventory.

(FOR MODELS MFD. SINCE 03/25) #KS23761 PRINTED IN CHINA V1.11.25

******Keep for Future Reference******

Power Supply

Before installing the spindle kit, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this kit, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with all applicable codes and standards.

⚠WARNING

Electrocution, fire, shock, or equipment damage may occur if machine is not properly grounded and connected to power supply.

Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Full-Load Current Rating at 110V ..... 5.7 Amps

Full-Load Current Rating at 110V (Installed on Model G0403) .....7.5 Amps

IMPORTANT: Accessories connected to the Model G0403 will increase full-load current rating of machine! Verify all electrical components connected to machine do not exceed **110V Circuit Requirements**.

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

⚠WARNING

Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.

110V Circuit Requirements

This kit is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage 110V, 115V, 120V
Cycle .....60 Hz
Phase ..... Single-Phase
Power Supply Circuit ..... 15 Amps
Plug/Receptacle ..... NEMA 5-15

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and a machine. The power supply circuit used for this kit must be sized to safely handle the full-load current drawn from the kit for an extended period of time. (If this kit is connected to a circuit protected by fuses, use a time delay fuse marked D.)

⚠CAUTION

For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.

Note: *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If this kit will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

Needed For Setup

The following items are needed, but not included, for the setup/assembly of this kit.

Description	Qty
• Safety Glasses (for each person)	1 Pr.
• Hex Wrench 6mm	1
• Distilled Water	5 Gal.
• G0403 Benchtop CNC Router	1
• Dust Collection System	1
• Dust Hose 1½"	1
• Hose Clamps 1½"	2

⚠WARNING

Wear safety glasses during the entire setup process!

Installation

The kit must be fully installed before it can be operated. Before beginning the installation process, refer to **Needed for Setup** and gather all listed items.

To install kit:

1. DISCONNECT MODEL G0403 CONTROL BOX FROM POWER!

2. Remove (4) cap screws and spindle motor clamp on Model G0403 spindle motor mount (see **Figure 3**).

Note: *Save spindle motor clamp and cap screws for future use.*

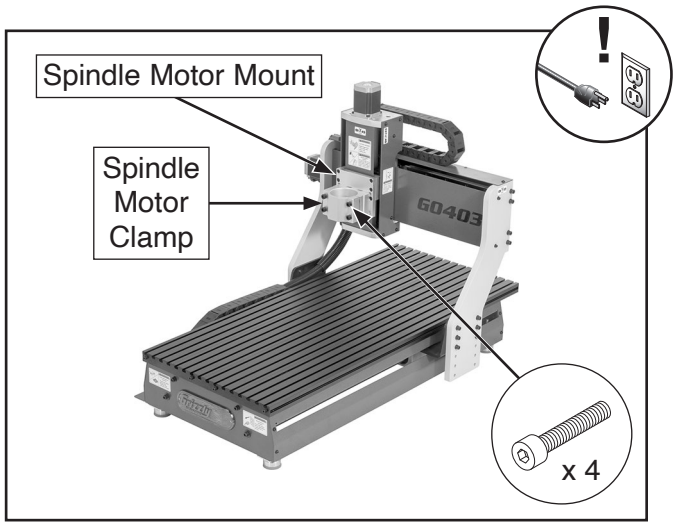


Figure 3. Location of spindle motor clamp cap screws on Model G0403 spindle motor mount.

3. Install spindle motor in 80mm spindle motor clamp included with Model T34438, then secure to spindle motor mount using (4) M8-1.25 x 90 cap screws (see **Figure 4**).

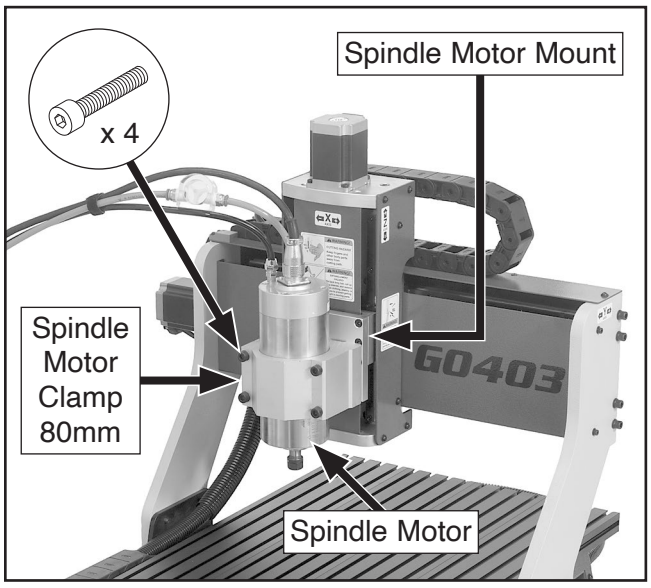


Figure 4. Spindle motor clamp (80mm) secured to Model G0403 spindle motor mount.

4. Remove black return tube from flow indicator (see **Figure 5**) by pushing in on push-to-connect fitting while also pulling on return tube.

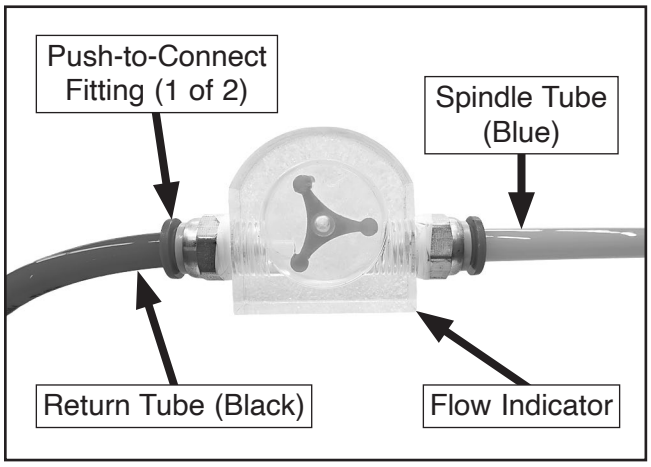


Figure 5. Location of flow indicator push-to-connect fitting.

5. Insert removed end of return tube, cooling pump power cord, and cooling pump outlet tube through holes in water reservoir lid (see **Figure 6**).

6. Insert blue outlet tube from cooling pump into open push-to-connect fitting on flow indicator (see **Figure 6**).

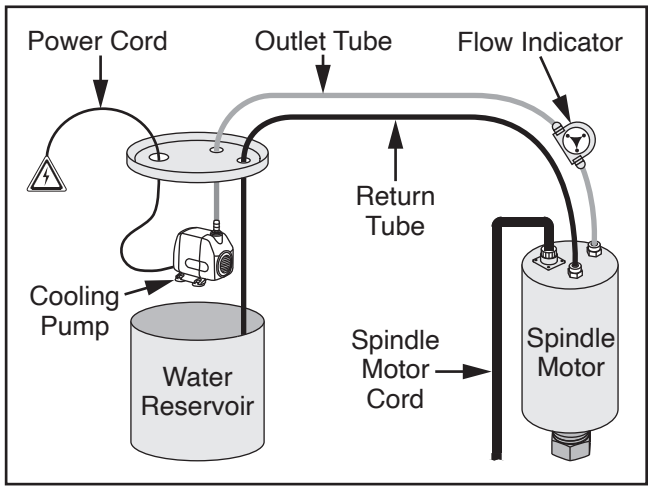


Figure 6. Location of cooling system connections.

NOTICE

High mineral content or dirty water can cause buildup and damage spindle motor. Do not use tap water if water quality is poor.

7. Place cooling pump in bottom of water reservoir and press down on pump to engage suction cups, then fill reservoir with five gallons of distilled water and close reservoir lid.

   IMPORTANT: Verify cooling pump is completely submerged prior to securing lid.

8. Place VFD near Model G0403 control box and connect SP plug from VFD to matching receptacle on rear of control box, as shown in **Figure 7**.

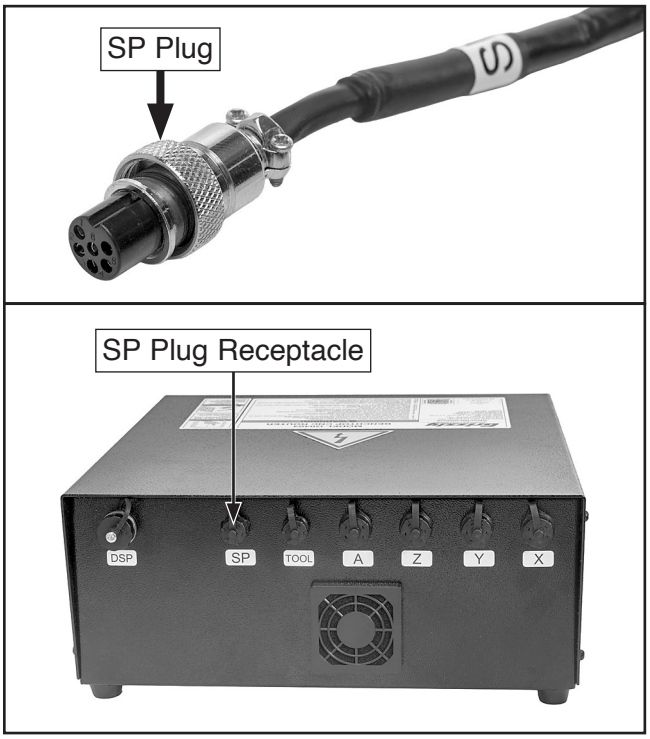


Figure 7. Location of kit electrical connections.

NOTICE

Secure any loose cords or tubes from spindle motor as needed to prevent binding or interference with axis movement.

9. Turn main power switch on control box to OFF position, then press EMERGENCY STOP button (see **Figure 8**).

10. Connect power cords from VFD and cooling pump to available auxiliary power connections on control box (see **Figure 8**).

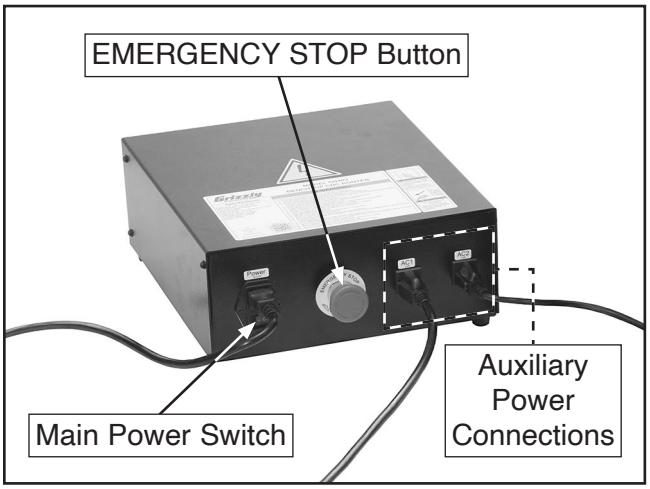


Figure 8. Location of control box auxiliary power connections.

Dust Collection

⚠CAUTION

This machine creates a lot of wood chips/dust during operation. Breathing airborne dust on a regular basis can result in permanent respiratory illness. Reduce your risk by wearing a respirator and capturing the dust with a dust-collection system.

Minimum CFM at Dust Port: 100 CFM

Do not confuse this CFM recommendation with the rating of the dust collector. To determine the CFM at the dust port, you must consider these variables: (1) CFM rating of the dust collector, (2) hose type and length between the dust collector and the machine, (3) number of branches or wyes, and (4) amount of other open lines throughout the system. Explaining how to calculate these variables is beyond the scope of this manual. Consult an expert or purchase a good dust collection "how-to" book.

NOTICE

Ensure dust hose is long enough for full range of gantry movement prior to beginning installation.

To connect dust collection system:

1. Loosen dust shoe knob on dust shoe (see **Figure 9**).

2. Install dust shoe on end of spindle motor and tighten dust shoe knob to secure, as shown in **Figure 9**.

   Note: *Dust shoe can be rotated as desired to accommodate working clearances.*

3. Fit 1½" dust hose over dust port and secure in place with hose clamp (see **Figure 9**).

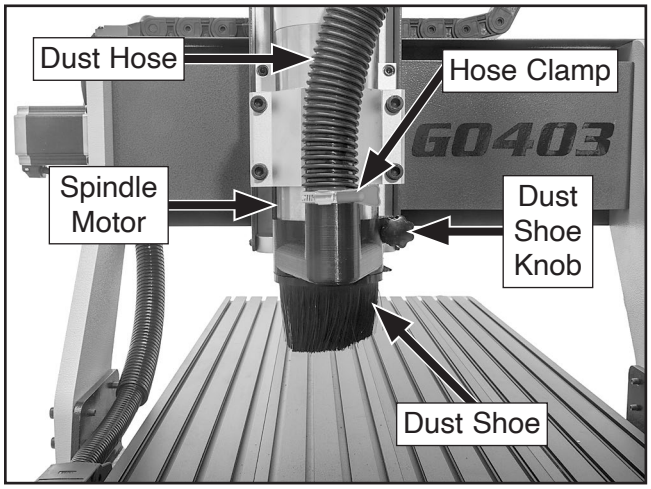


Figure 9. Location of spindle motor dust collection components.

4. Tug hose to make sure it does not easily come off.

   Note: *A tight fit is necessary for proper performance.*

Test Run

Once assembly is complete, test run the spindle motor to ensure it is properly connected to power and safety components are functioning correctly.

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and contact Grizzly Tech Support BEFORE operating the machine again.

For issues concerning the VFD, refer to the Mokweir MK100 series manual found at **https://www.cn-vfd.com**. All VFD servicing should be done by an authorized and trained technician. The VFD parameters have been set at the factory to optimize the performance of the machine and should not be adjusted unless instructed by Grizzly Tech Support. Improper adjustments can cause machine damage, disable important safety features, and may void the warranty.

The test run consists of verifying the following: 1) the cooling pump powers up and runs correctly, and 2) the spindle motor powers up and runs correctly.

⚠WARNING

Serious injury or death can result from using this machine BEFORE understanding its controls and related safety information. DO NOT operate, or allow others to operate, machine until the information is understood.

⚠WARNING

DO NOT start machine until all preceding setup instructions have been performed. Operating an improperly set up machine may result in malfunction or unexpected results that can lead to serious injury, death, or machine/property damage.

To test run spindle motor:

1. Clear all setup tools away from machine.

2. Twist EMERGENCY STOP button on control box clockwise until it springs out (see **Figure 10**). This resets button so machine can start.

3. Twist Emergency Stop button on DSP controller clockwise until it springs out (see **Figure 10**). This resets button so DSP controller will accept commands.

Figure 10. Resetting EMERGENCY STOP button.

4. Move main power switch on control box to ON position.

5. Verify cooling pump starts and runs smoothly without any unusual problems or noises, and flow indicator begins rotating (see **Figure 11**).

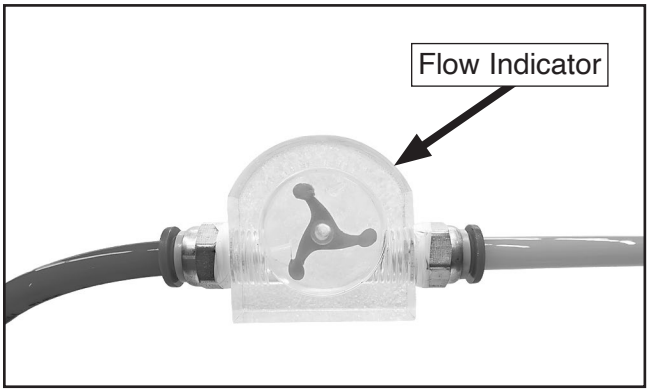


Figure 11. Location of flow indicator.

6. Move ON/OFF switch on DSP controller to ON position.

   — After approximately 10 seconds, DSP controller will finish boot sequence and show Coord screen (see **Figure 12**).

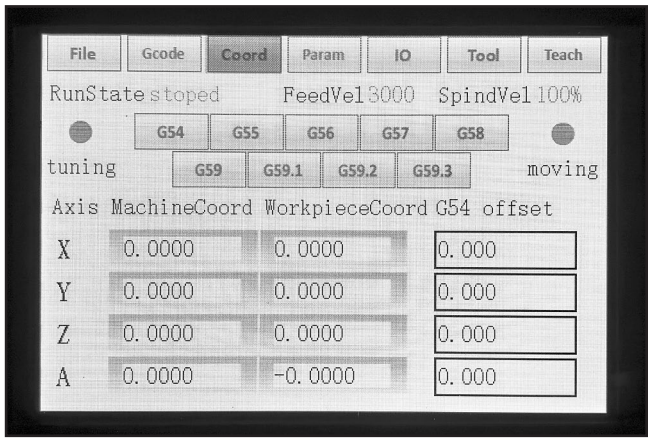


Figure 12. Example of DSP controller Coord screen.

7. Rotate axis selection dial (see **Figure 13**) on DSP controller to "Spindle Speed", then rotate jog mode dial to "0.1".

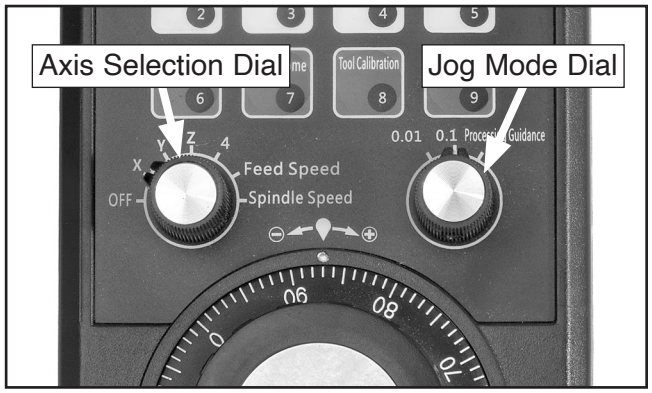


Figure 13. Location of DSP controller axis selection dial and jog mode dial.

8. Press and hold one of the enable buttons on either side of DSP controller and rotate MPG wheel counterclockwise until SpindVel (Spindle Velocity) value in upper right corner shows 0% (see **Figure 14**).

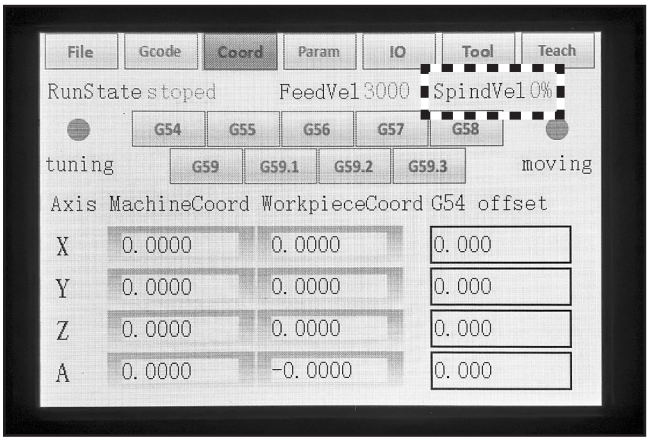


Figure 14. Location of SpindVel status.

NOTICE

Operating spindle motor without cooling pump may damage internal components of spindle motor.

9. Press "Spindle ON/OFF" button on DSP controller to turn spindle motor ***ON***.

10. Press and hold one of the enable buttons on either side of DSP controller, then slowly rotate MPG wheel clockwise until SpindVel value shows 100% (see **Figure 15**).

    — Verify spindle motor starts and runs smoothly without any unusual problems or noises through its full speed range.

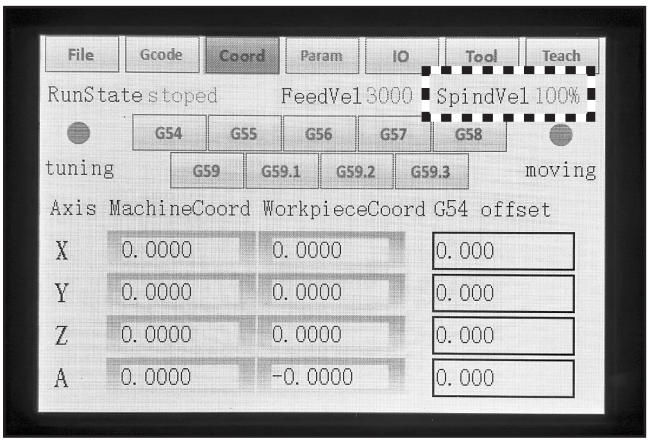


Figure 15. SpindVel status displaying 100%.

11. Press "Spindle ON/OFF" button on DSP controller to turn spindle motor ***OFF***.

    Congratulations! Test Run is complete.

Installing/Removing Tooling

⚠WARNING

- **Serious injury or death can occur from getting clothing, jewelry, or long hair entangled with rotating cutter/spindle. Contact with rotating cutting tool can result in severe cuts or amputation of fingers. Flying wood chips can cause blindness or eye injuries. Broken cutting tools, unsecured workpieces, or adjustment tools thrown by rotating spindle can strike operator or bystanders with great force. To reduce risk of serious injury when operating this machine, heed and understand the following:**
  - **— Secure tooling so it does not fly out of spindle during operation.**
  - **— AVOID CONTACT WITH MOVING PARTS! You could be severely injured if you accidentally touch spinning tooling or get entangled in moving parts.**
  - **— If a workpiece becomes stuck or debris removal is necessary, turn machine *OFF*, allow spindle and tooling to come to a complete stop, and disconnect power before clearing.**
  - **— Use proper speeds and feeds for each size and type of cutting tool as recommended by tool manufacturer.**
  - **— Always remove tools used on spindle immediately after use.**

The Model T34438 requires an ER11 collet to secure tooling for operations.

Items Needed	Qty
Open-End Wrenches 13, 14mm	1 Ea.
ER11 Collet	1
Tooling	1
Work Gloves	1 Pr.
Clean Shop Rag	As Needed

Installing Tooling

1. DISCONNECT SPINDLE MOTOR AND MODEL G0403 FROM POWER!

2. Loosen and remove collet nut on spindle motor (see **Figure 16**), then remove ER11 collet from spindle, if installed.

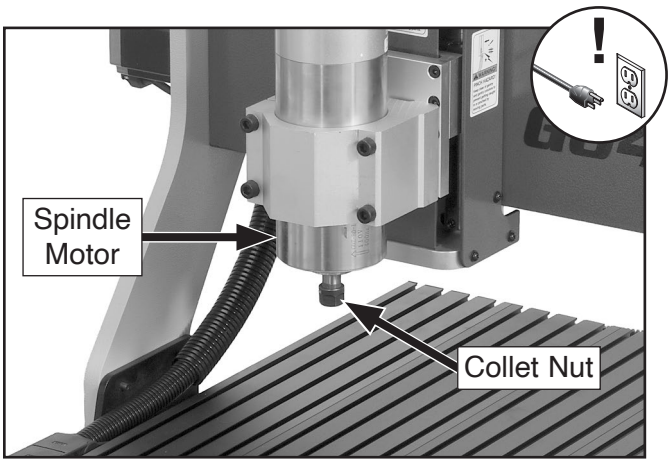


Figure 16. Location of spindle motor tooling components.

3. Put on work gloves, then insert tooling into ER11 collet and verify entire length of tool shaft will be secured by collet springs.

4. Insert collet in spindle and tighten collet nut to secure tooling (see **Figure 17**).

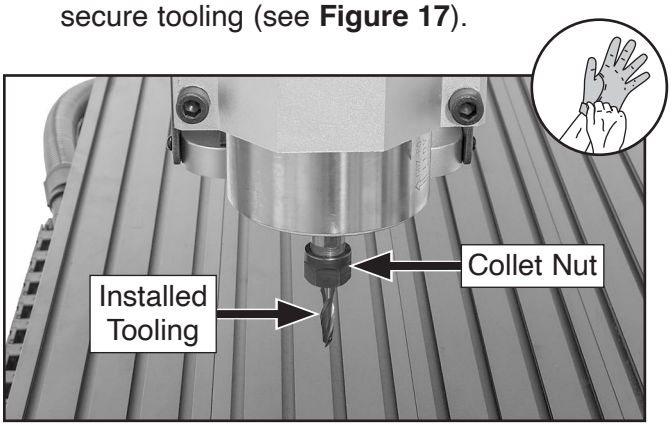


Figure 17. Tooling installed in spindle motor.

Removing Tooling

1. DISCONNECT SPINDLE MOTOR AND MODEL G0403 FROM POWER!

2. Place a shop rag under spindle to catch falling cutting tool.

3. Loosen and remove collet nut on spindle motor, then remove ER11 collet and tooling from spindle.

Accessories

⚠WARNING

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended for this machine by Grizzly.

NOTICE

Refer to our website or latest catalog for additional recommended accessories.

C1921—Router Bit Set for Sign Making
Forged with a ¼" shank and 2⅜" overall length, this set comes with ¼", ⅜", and ½" sizes.

Figure 18. C1921 Router Bit Set for Sign Making.

T30905—¼" Solid Carbide Upcut Spiral
T30906—¼" Solid Carbide Downcut Spiral

Figure 19. Assorted CNC router bits.

T33587—½ HP Mini Portable Dust Collector
This portable collector features an impressive 525 CFM and up to 11" of static pressure—perfect for handling demanding workshop tasks. The 12-gallon collection bag features a zipper for quick and easy bag cleaning, and the pleated 2.5-micron filtration rating captures airborne dust.

Figure 20. T33587 ½ HP Mini Portable Dust Collector

G2753—Dust Collection Nozzle Stand - Bench
G2754—Dust Collection Nozzle Stand - Floor
These 12" wide dust nozzles with 4" dust ports can be rotated 360 degrees and feature a heavy-duty cast-iron base for stability.

Figure 21. Assorted dust collection nozzle stands.

Wiring

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your kit to the one stated in this manual, and study this section carefully.

If there are differences between your kit and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring of your kit. An updated wiring diagram may be available.

⚠WARNING

Wiring Safety Instructions

SHOCK HAZARD. Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine and connected accessories before servicing electrical components!

MODIFICATIONS. Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved aftermarket parts.

WIRE CONNECTIONS. All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

CIRCUIT REQUIREMENTS. You MUST follow the requirements at the beginning of this manual when connecting your kit to a power source.

WIRE/COMPONENT DAMAGE. Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

MOTOR WIRING. The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.

CAPACITORS/INVERTERS. Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

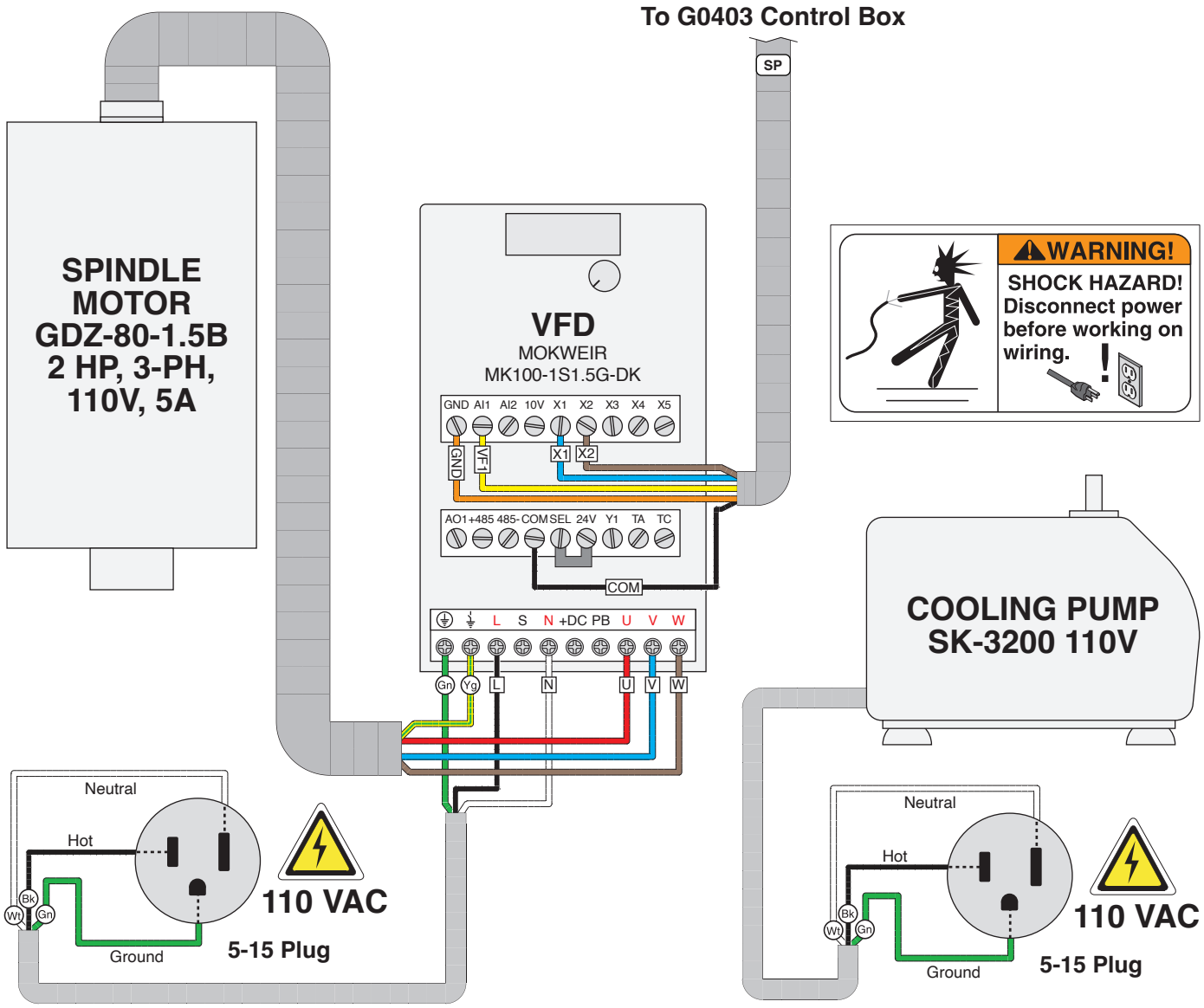
NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.grizzly.com.

COLOR KEY

BLACK (Bk)	BLUE (Bl)	YELLOW (Yl)	LIGHT BLUE (Lb)
WHITE (Wt)	BROWN (Br)	YELLOW GREEN (Yg)	BLUE WHITE (Bw)
GREEN (Gn)	GRAY (Gy)	PURPLE (Pu)	TURQUOISE (Tu)
RED (Rd)	ORANGE (Or)	PINK (Pk)	

Wiring Diagram



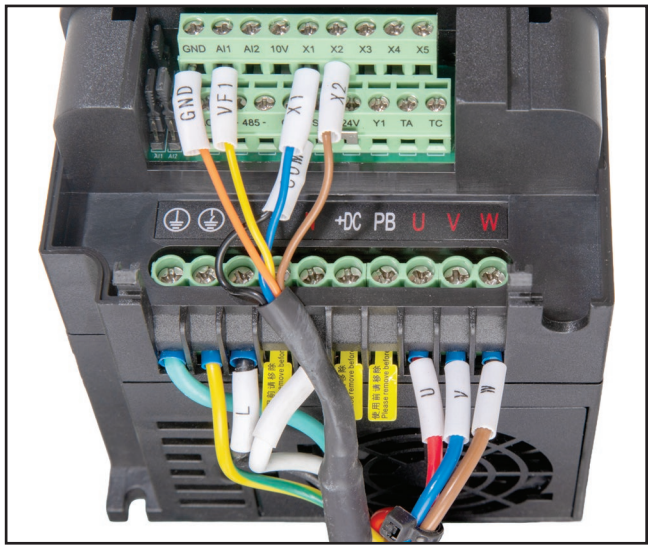


Figure 22. VFD terminal connections.

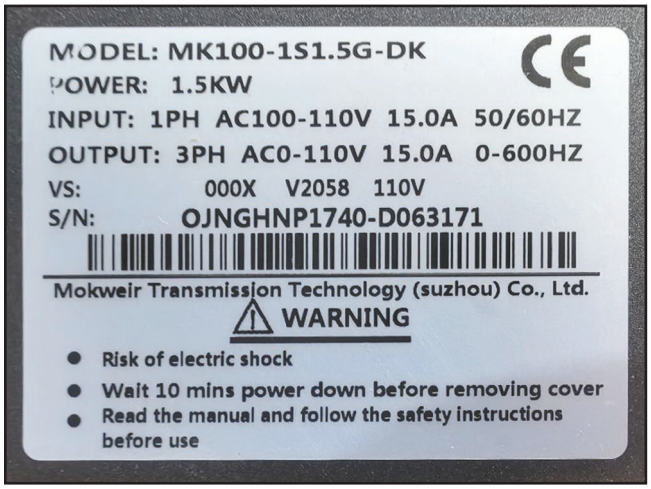
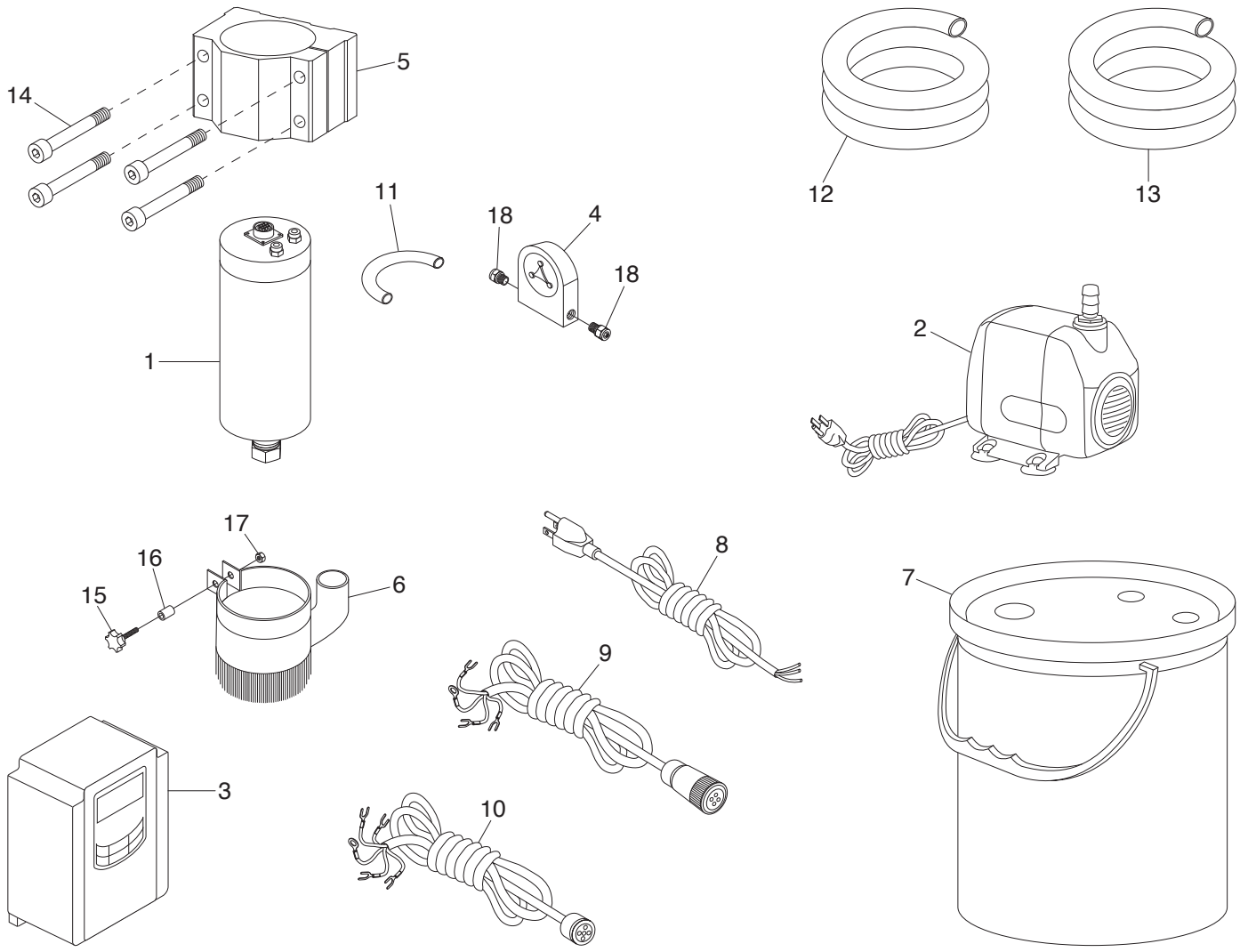


Figure 23. VFD cover.

T34438 Parts Breakdown & List



REF	PART #	DESCRIPTION
1	PT34438001	MOTOR 2HP 110V 3-PH GDZ-80-1.5B
2	PT34438002	COOLING PUMP SK-3200 110V
3	PT34438003	VFD MOKWEIR MK100-1S1.5G-DK 110V
4	PT34438004	FLOW INDICATOR
5	PT34438005	SPINDLE MOTOR CLAMP 80MM
6	PT34438006	DUST SHOE 80MM W/DUST PORT 1-1/2"
7	PT34438007	WATER RESERVOIR W/LID, 5-GALLON
8	PT34438008	POWER CORD 14G 3W 90" 5-15P
9	PT34438009	MOTOR CORD 18G 4W 120"

REF	PART #	DESCRIPTION
10	PT34438010	SP CORD 24G 5W 90"
11	PT34438011	WATER TUBE 5 X 8 X 130, BLUE PE
12	PT34438012	WATER TUBE 5 X 8 X 2450, BLUE PE
13	PT34438013	WATER TUBE 5 X 8 X 2450, BLACK PE
14	PT34438014	CAP SCREW M8-1.25 X 90
15	PT34438015	KNOB BOLT M5-.8 X 35
16	PT34438016	SPACER 5 X 9 X 10MM
17	PT34438017	HEX NUT M5-.8
18	PT34438018	FITTING PC8-02 8MM X 1/4" BSPT

Please Note: *We do our best to stock replacement parts whenever possible, but we cannot guarantee that all parts shown here are available for purchase. Call* ***(800) 523-4777*** *or visit our online parts store at* ***www.grizzly.com*** *to check for availability.*