

READ THIS FIRST



Model G0668

*****IMPORTANT UPDATE*****

**For Machines Mfd. Since 05/22
and Owner's Manual Printed 02/08**

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

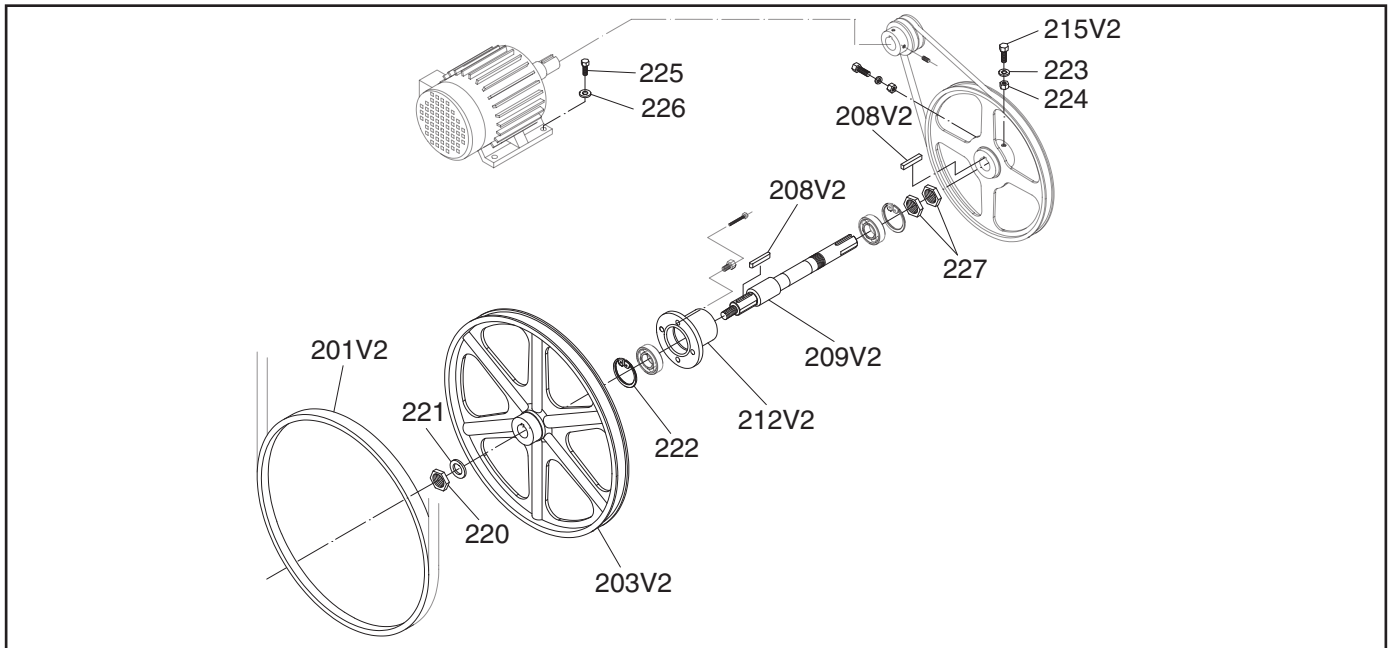
The following changes were recently made since the owner's manual was printed:

- The upper/lower wheels and related parts have changed or been added.

Aside from this information, all other content in the owner's manual applies and **MUST** be read and understood for your own safety. **IMPORTANT: Keep this update with the owner's manual for future reference.**

For questions or help, contact our Tech Support at (570) 546-9663 or techsupport@grizzly.com.

Revised Motor & Lower Wheel Parts

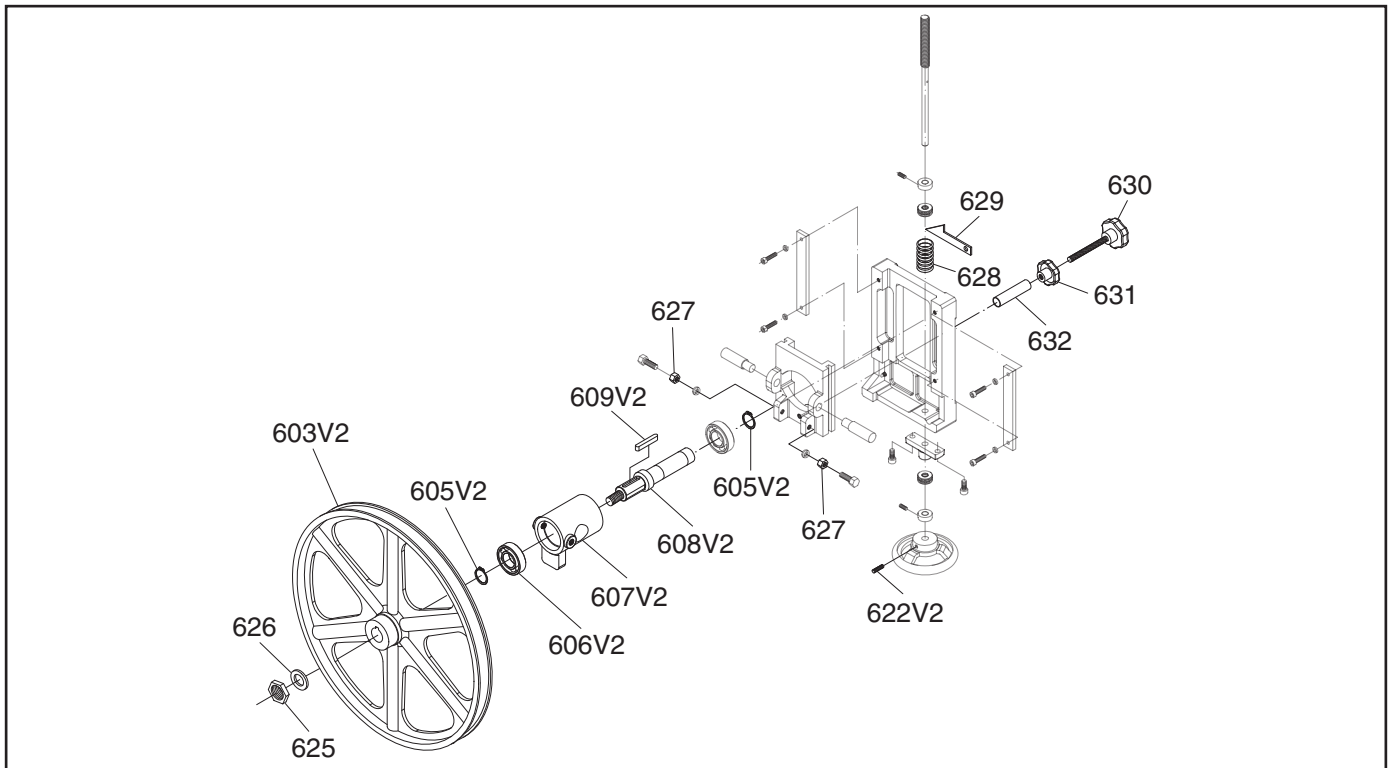


REF	PART #	DESCRIPTION
201V2	P0668201V2	WHEEL TIRE 35.5 X 3 V2.05.22
203V2	P0668203V2	WHEEL LOWER V2.05.22
208V2	P0668208V2	KEY 7 X 7 X 50 V2.05.22
209V2	P0668209V2	WHEEL SHAFT LOWER V2.05.22
212V2	P0668212V2	BEARING HOUSING V2.05.22
215V2	P0668215V2	HEX BOLT M12-1.75 X 35 V2.05.22
220	P0668220	HEX NUT M28-1.75

REF	PART #	DESCRIPTION
221	P0668221	FLAT WASHER 28MM
222	P0668222	EXT RETAINING RING 30MM
223	P0668223	LOCK WASHER 12MM
224	P0668224	HEX NUT M12-1.75
225	P0668225	HEX BOLT M8-1.25 X 20
226	P0668226	FLAT WASHER 8MM
227	P0668227	HEX NUT M28-1.75 THIN

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Revised Upper Wheel Parts



REF	PART #	DESCRIPTION
603V2	P0668603V2	WHEEL UPPER V2.05.22
605V2	P0668605V2	EXT RETAINING RING 30MM V2.05.22
606V2	P0668606V2	BALL BEARING 6206Z V2.05.22
607V2	P0668607V2	BEARING HOUSING V2.05.22
608V2	P0668608V2	WHEEL SHAFT UPPER V2.05.22
609V2	P0668609V2	KEY 7 X 7 X 30 V2.05.22
622V2	P0668622V2	SET SCREW M8-1.25 X 10 V2.05.22
625	P0668625	HEX NUT M28-1.75

REF	PART #	DESCRIPTION
626	P0668626	FLAT WASHER 28MM
627	P0668627	HEX NUT 3/8-16
628	P0668628	COMPRESSION SPRING 5 X 22 X 61
629	P0668629	POINTER
630	P0668630	KNOB BOLT 1/2-12 X 6-3/4, 6-LOBE, D2-3/4
631	P0668631	KNOB 1/2-12, 6-LOBE, D1-3/4
632	P0668632	SLEEVE



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Model G0668

IMPORTANT UPDATE

For Machines Mfd. Since 03/20
and Owner's Manual Revised 02/08

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

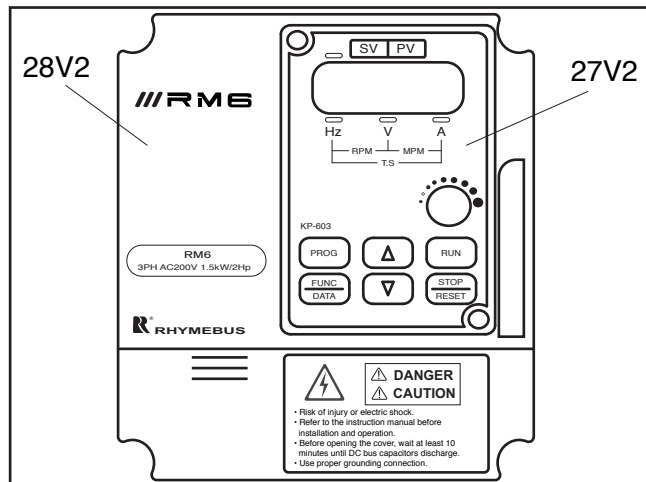
The following changes were recently made since the owner's manual was printed:

- Inverter and digital display have changed.
- Wiring diagrams have been updated.
- The wiring diagrams and photos in this update replace ALL those shown in prior updates and manual.

Aside from this information, all other content in the owner's manual applies and **MUST** be read and understood for your own safety. **IMPORTANT: Keep this update with the owner's manual for future reference.**

For questions or help, contact our Tech Support at (570) 546-9663 or techsupport@grizzly.com.

Revised Parts



REF	PART #	DESCRIPTION
27V2	P0668027V2	DIGITAL DISPLAY KP-603A V2.03.20
28V2	P0668028V2	INVERTER RM6-2001B3 2HP 220V V2.03.20

New Inverter & Digital Display

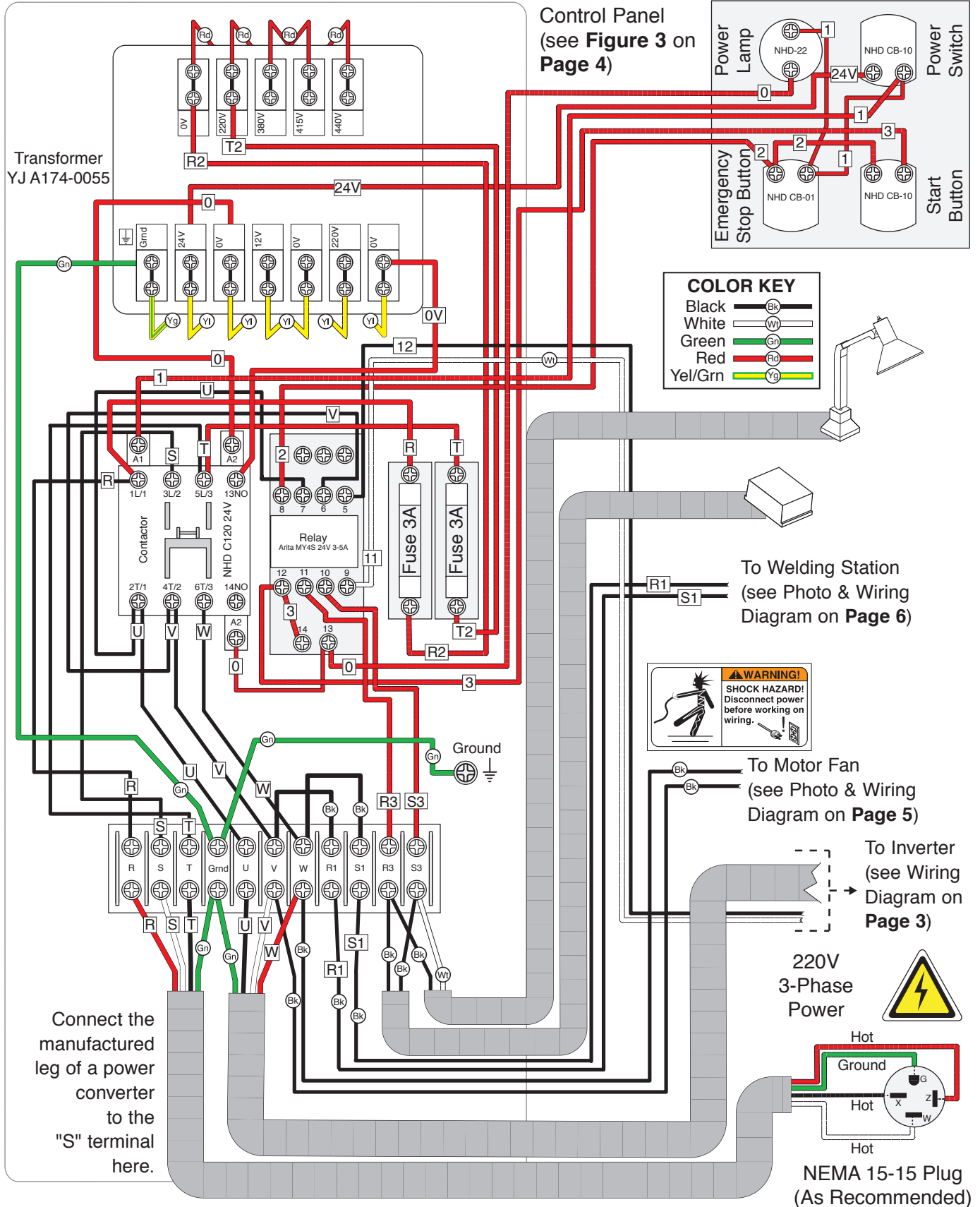


Old Inverter

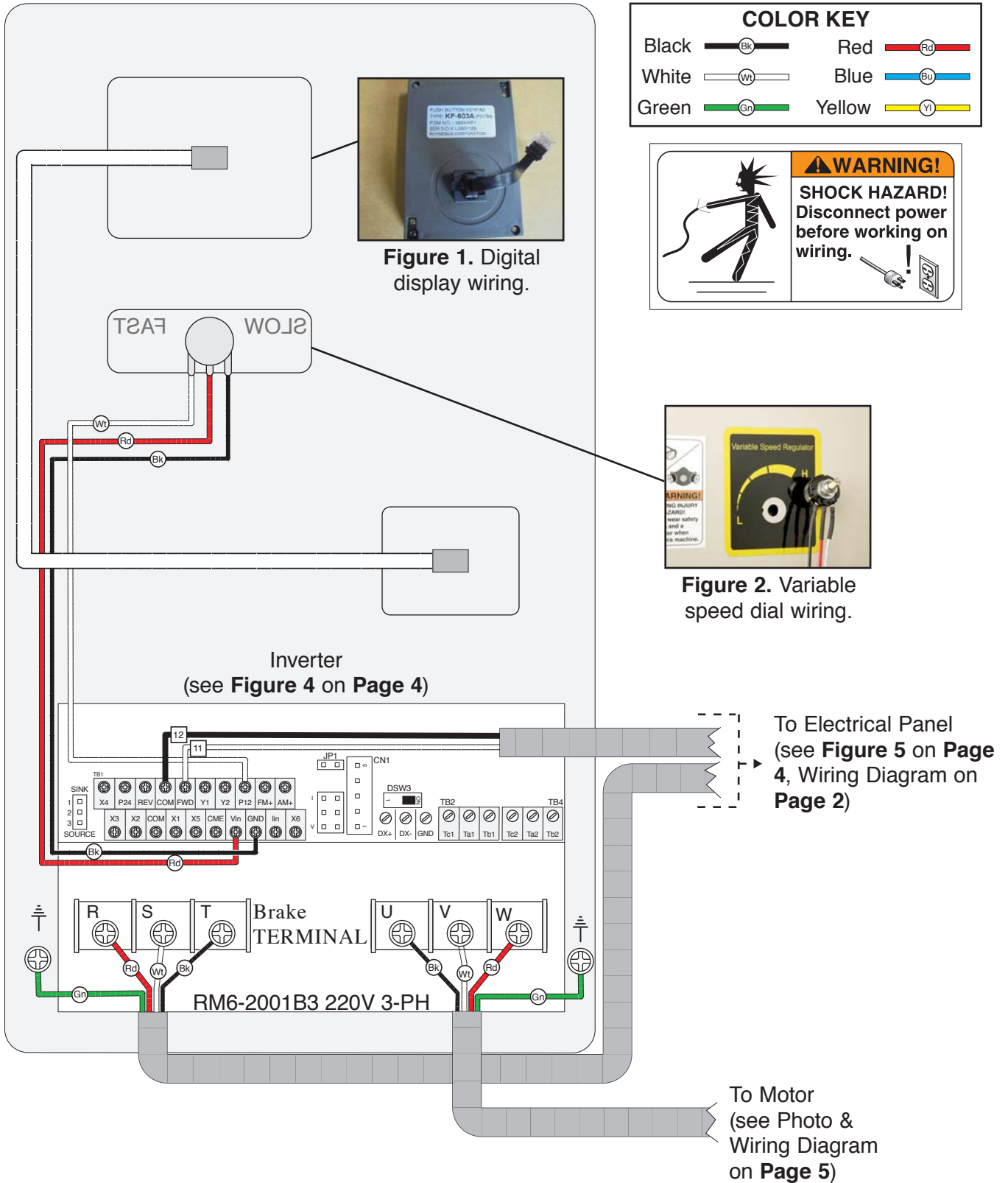


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Electrical & Control Panel Wiring Diagram



Inverter Wiring Diagram



COLOR KEY

Black		Red	
White		Blue	
Green		Yellow	



Figure 1. Digital display wiring.



Figure 2. Variable speed dial wiring.

To Electrical Panel
(see **Figure 5** on **Page 4**, Wiring Diagram on **Page 2**)

To Motor
(see Photo & Wiring Diagram on **Page 5**)



Electrical Components

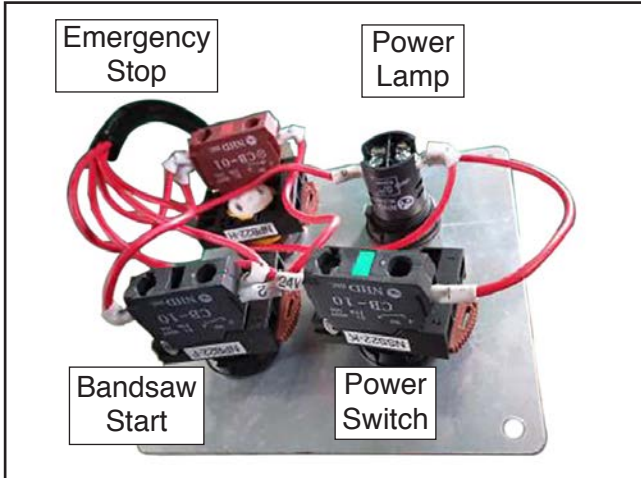


Figure 3. Control panel wiring (see wiring diagram on Page 2).

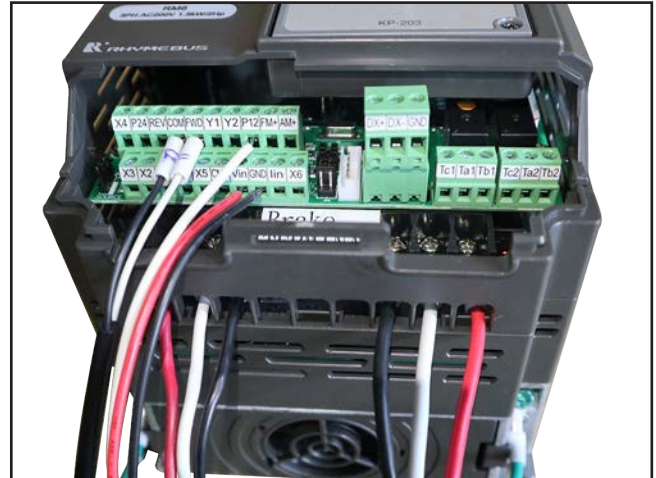


Figure 4. Inverter/Controller box wiring (see wiring diagram on Page 3).

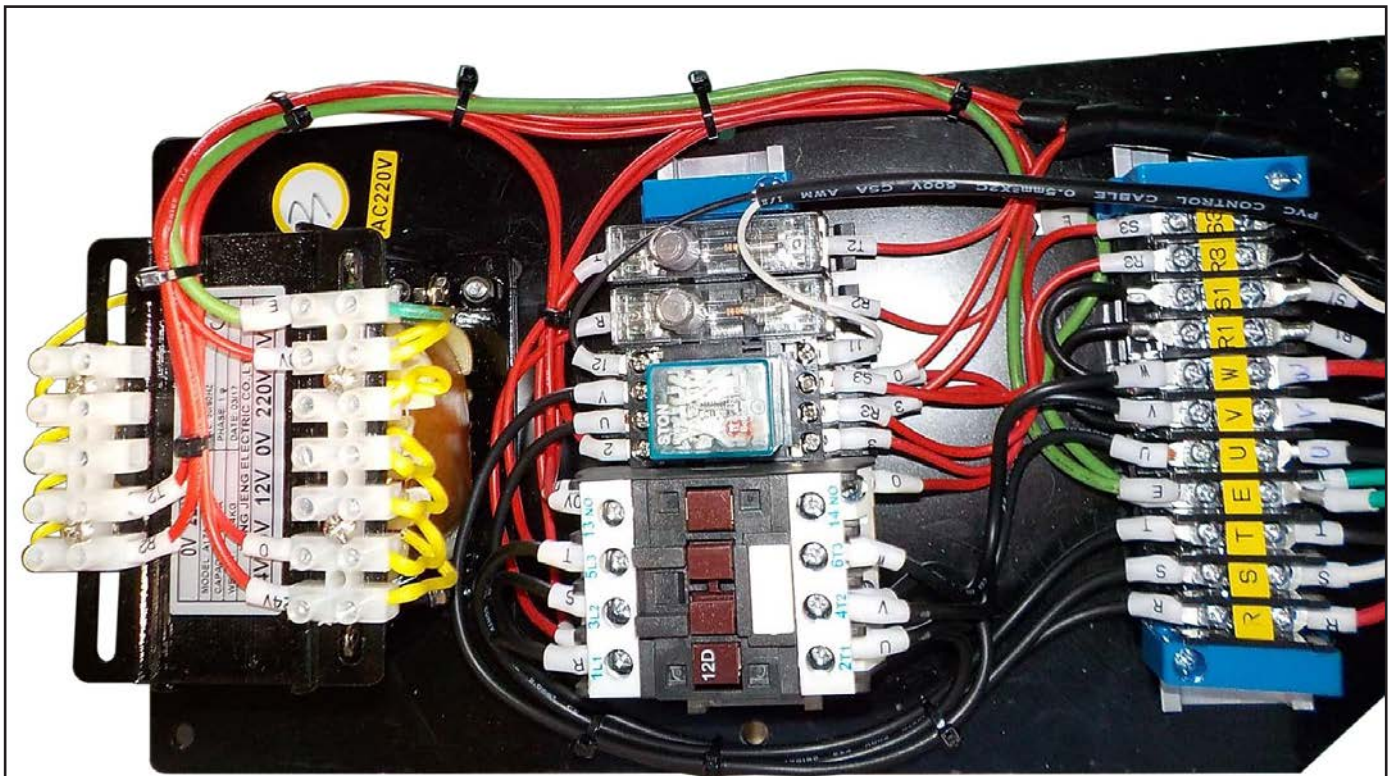


Figure 5. Main electrical wiring (see wiring diagram on Page 2).




Motor Wiring Diagram

COLOR KEY	
Black	
White	
Green	
Red	



⚠ WARNING!

SHOCK HAZARD!
Disconnect power before working on wiring.



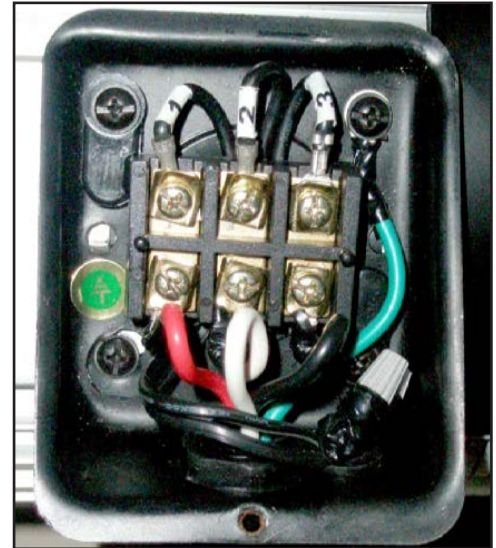
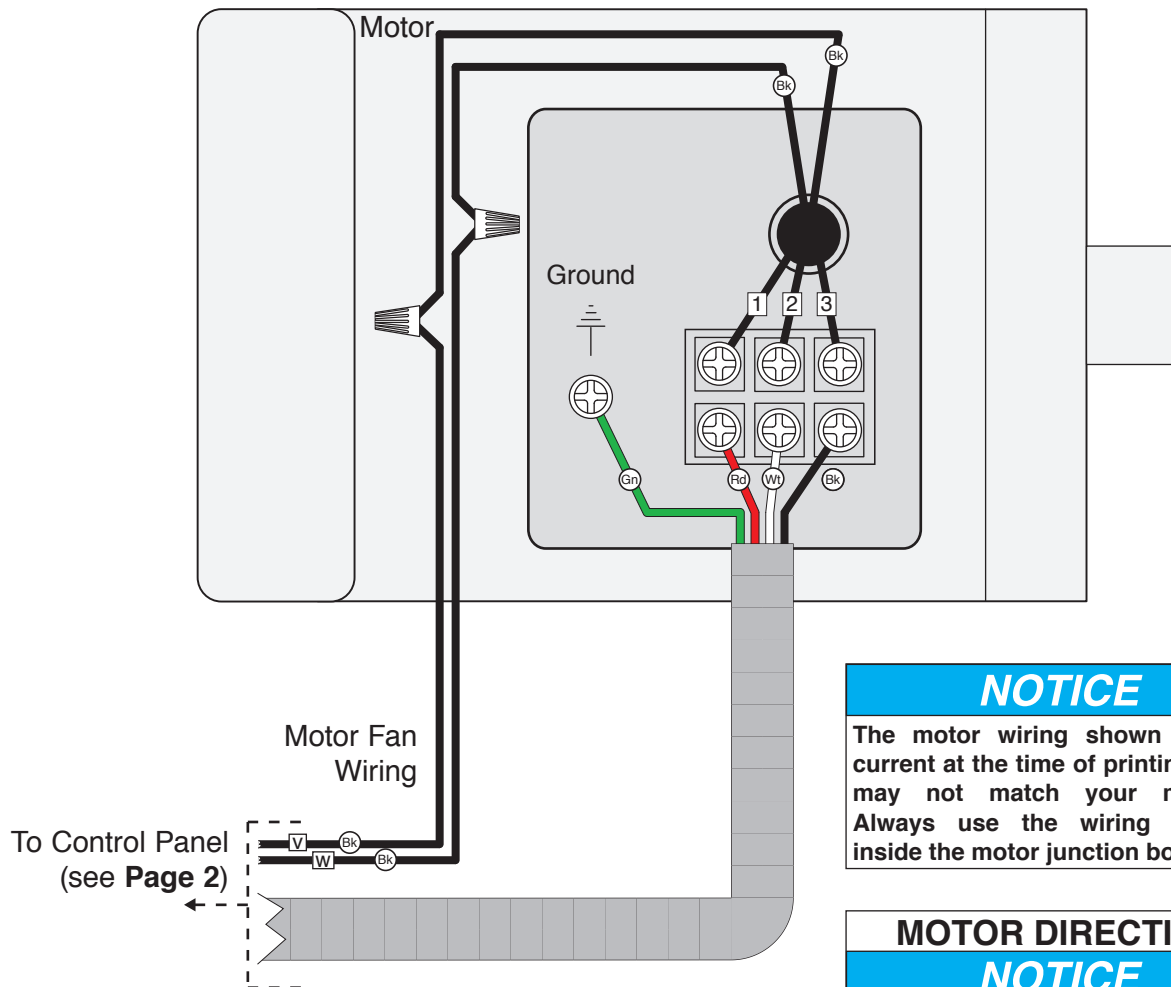


Figure 6. Motor junction box wiring.



NOTICE

The motor wiring shown here is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

MOTOR DIRECTION

NOTICE

If motor rotates in opposite direction, swap any two power source wires at the incoming terminals.



Welding Station Wiring Diagram

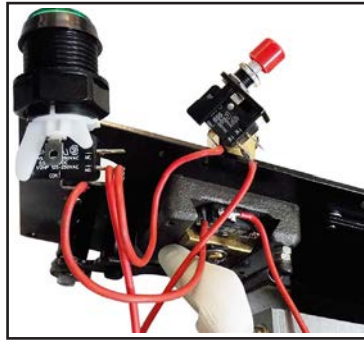


Figure 7. Annealing and welding buttons.

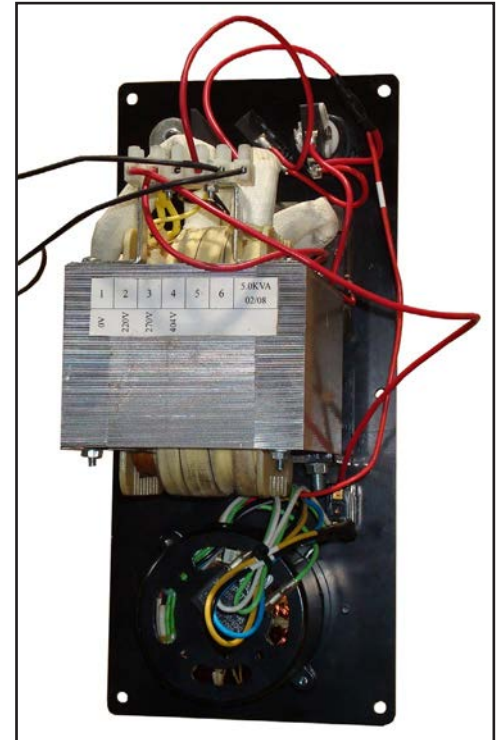
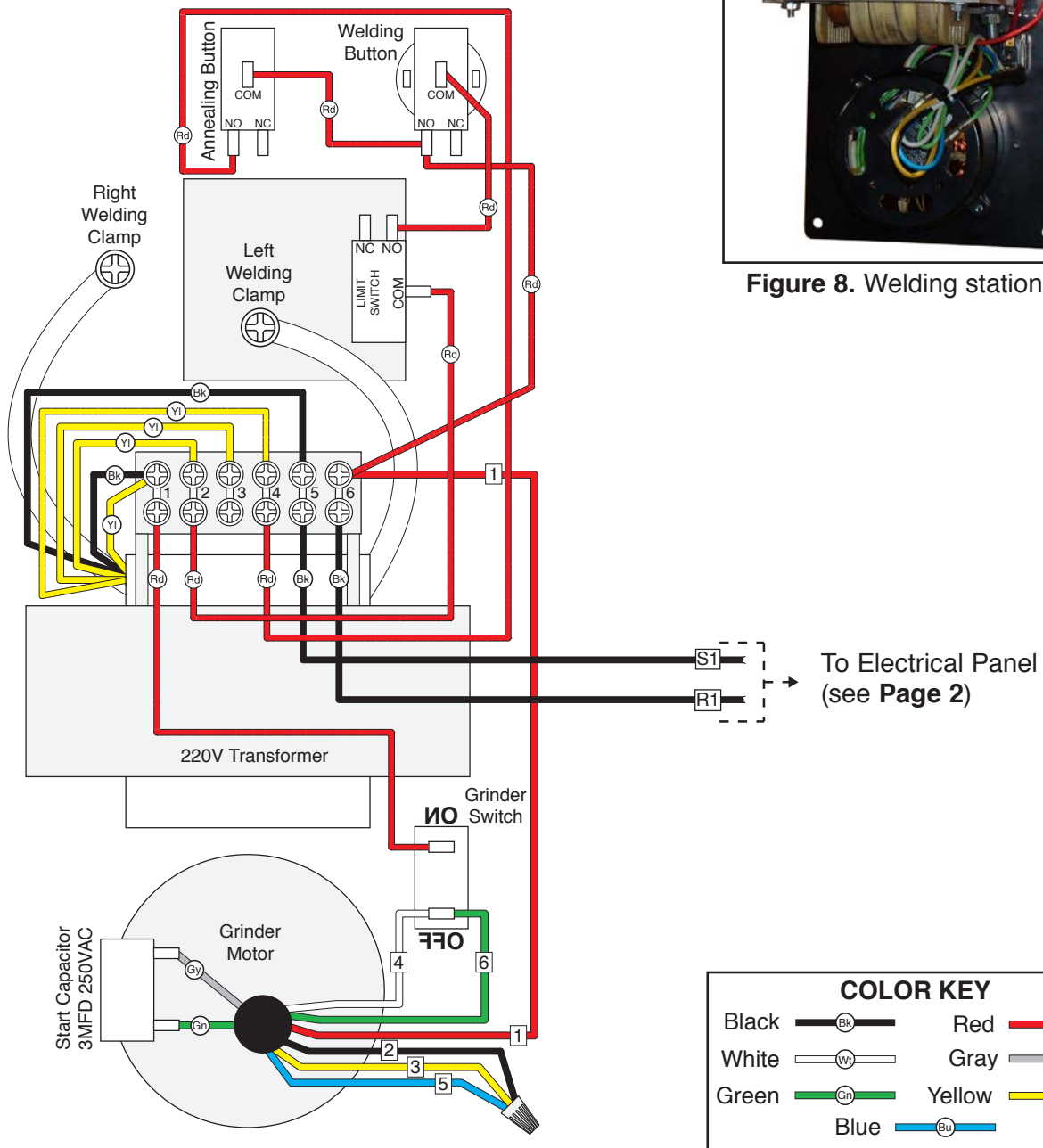


Figure 8. Welding station wiring.



COLOR KEY			
Black	—(Bk)—	Red	—(Rd)—
White	—(Wh)—	Gray	—(Gy)—
Green	—(Gn)—	Yellow	—(Yl)—
Blue	—(Bu)—		



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Model G0668

*****IMPORTANT UPDATE*****

For Machines Mfd. Since 08/18
and Owner's Manual Revised 02/08

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

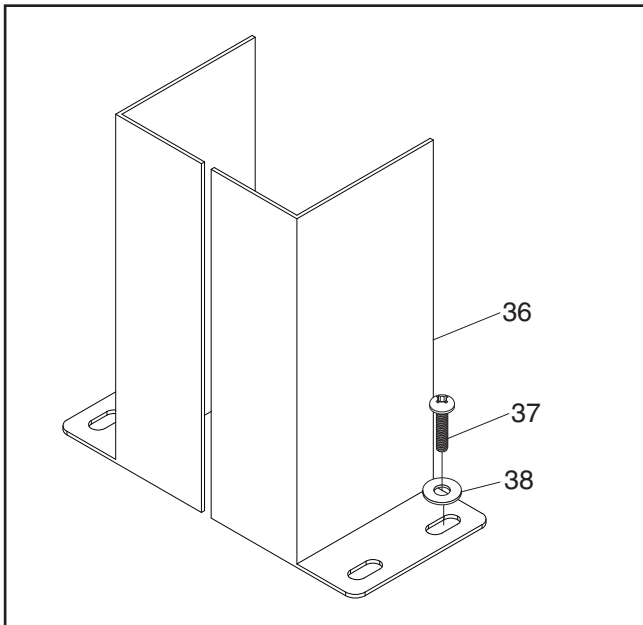
The following changes were recently made since the owner's manual was printed:

- Added lower blade guard.

Aside from this information, all other content in the owner's manual applies and **MUST** be read and understood for your own safety. **IMPORTANT: Keep this update with the owner's manual for future reference.**

For questions or help, contact our Tech Support at (570) 546-9663 or techsupport@grizzly.com.

New Parts



REF	PART #	DESCRIPTION
36	P0668036	LOWER BLADE GUARD SET
37	P0668037	PHLP HD SCR M6-1 X 10
38	P0668038	FLAT WASHER 6MM

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Model G0668

*****IMPORTANT UPDATE*****

**For Machines Mfd. Since June, 2008
and Owner's Manual Printed February, 2008**

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

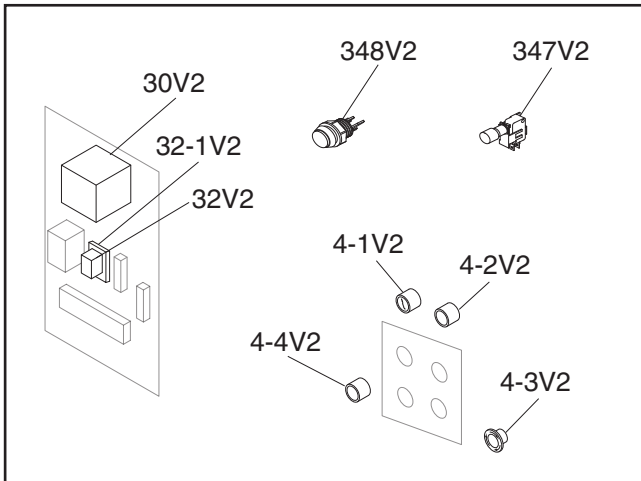
We recently made the following changes to the Model G0668:

- Revised electrical & control panel wiring diagram and photos.
- Revised welding station wiring diagram.
- Changed transformer manufacturer.
- Revised electrical parts.

Aside from the information contained in this update, all other content in the owner's manual applies to this machine. For your own safety, you **MUST** read and understand this update and the applicable owner's manual. **Keep this update for future reference!**

If you have any further questions about this manual update or the changes made to the machine, contact our Technical Support at (570) 546-9663 or email techsupport@grizzly.com.

Revised Electrical Parts



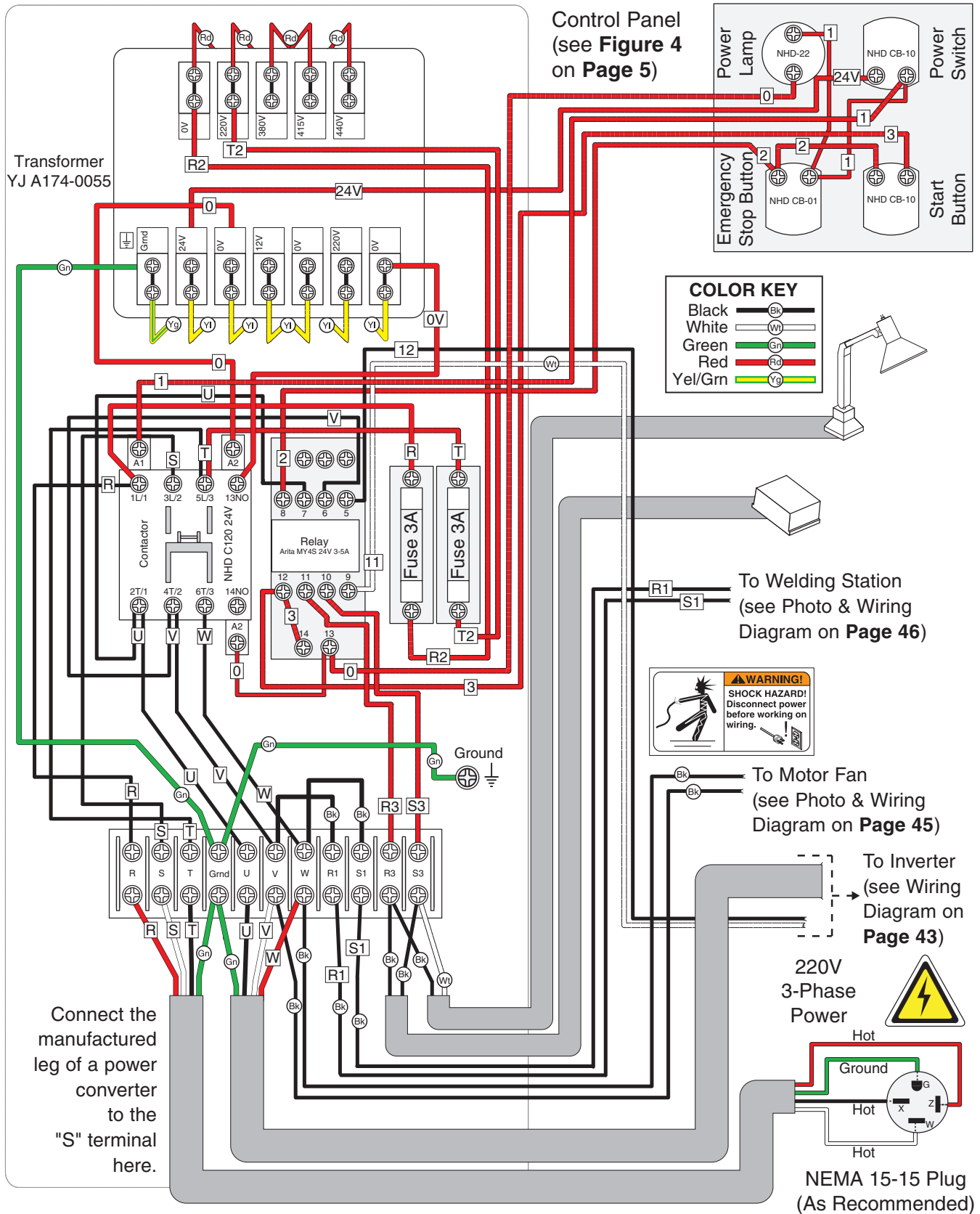
REF	PART #	DESCRIPTION
4-1V2	P0668004-1V2	POWER SWITCH W/KEY NHD CB-10 V2.06.08
4-2V2	P0668004-2V2	POWER LAMP NHD-22 V2.06.08
4-3V2	P0668004-3V2	E-STOP BUTTON NHD CB-01 V2.06.08
4-4V2	P0668004-4V2	MOTOR ON BUTTON NHD CB-10 V2.06.08
30V2	P0668030V2	TRANSFORMER YJ A174-0055 V2.01.13
32V2	P0668032V2	RELAY STON MY4S 24V 3-5A V2.01.13
32-1V2	P0668032-1V2	RELAY HOLDER STON PYF14AE V2.01.13
347V2	P0668347V2	ANNEALING PUSH BUTTON V2.06.08
348V2	P0668348V2	WELDING PUSH BUTTON V2.06.08

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Revised Electrical & Control Panel Wiring Diagram



Revised Welding Station Wiring Diagram

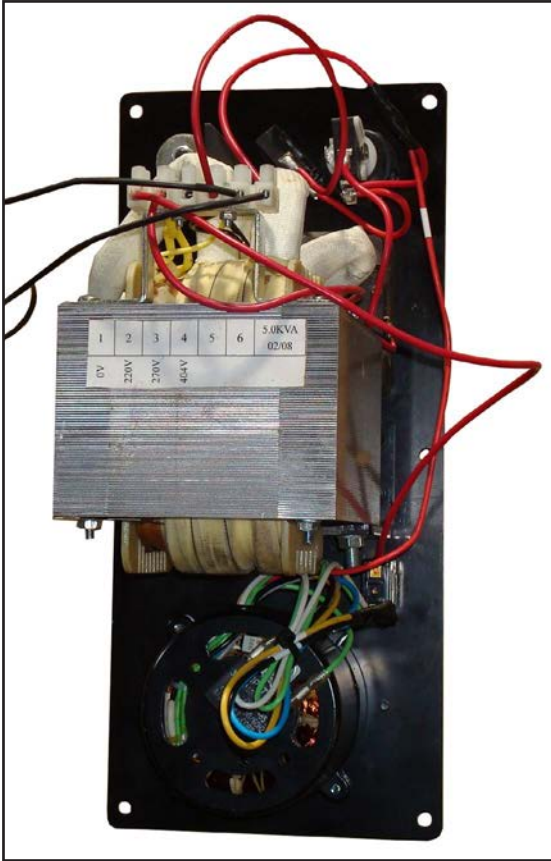
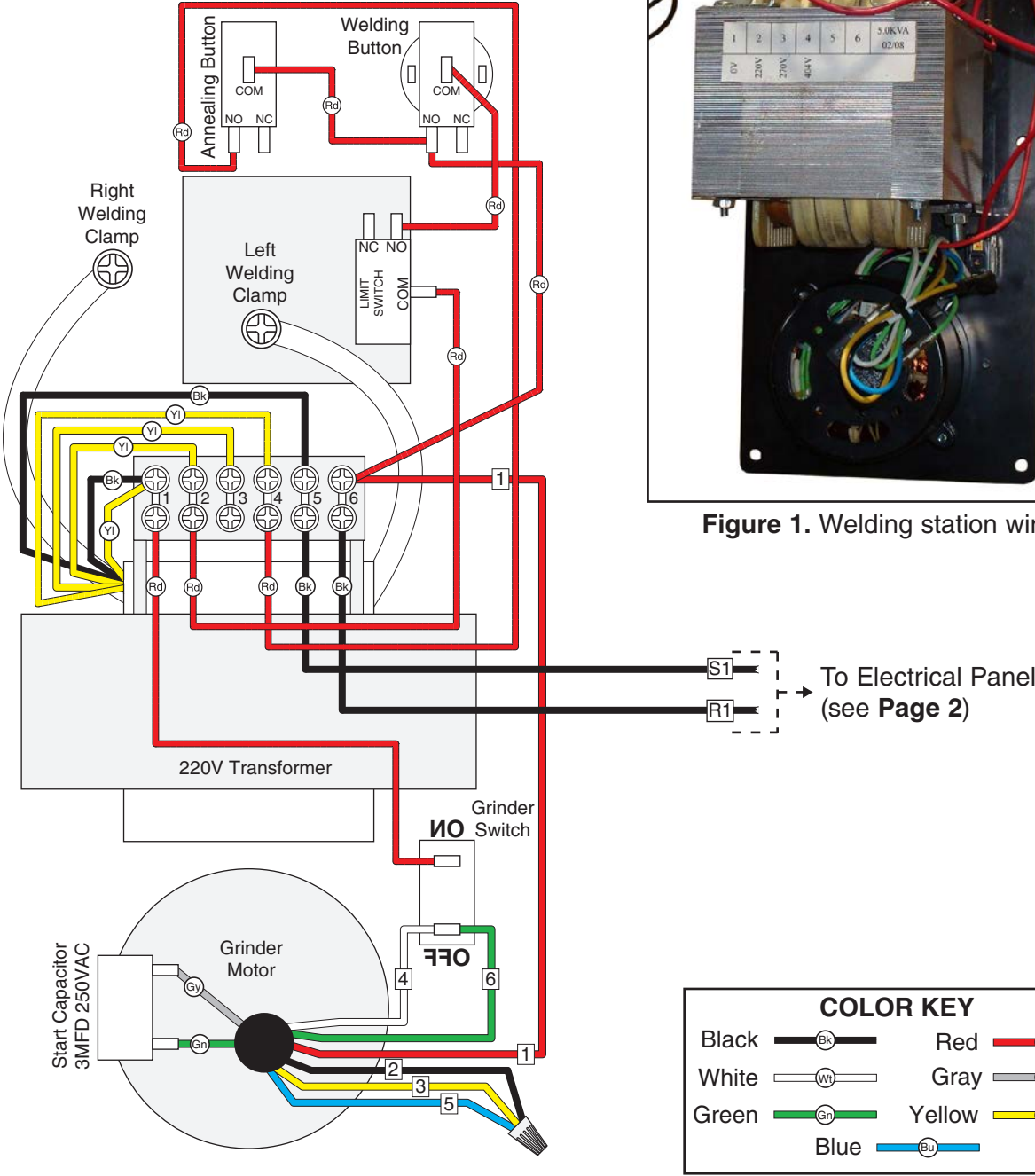
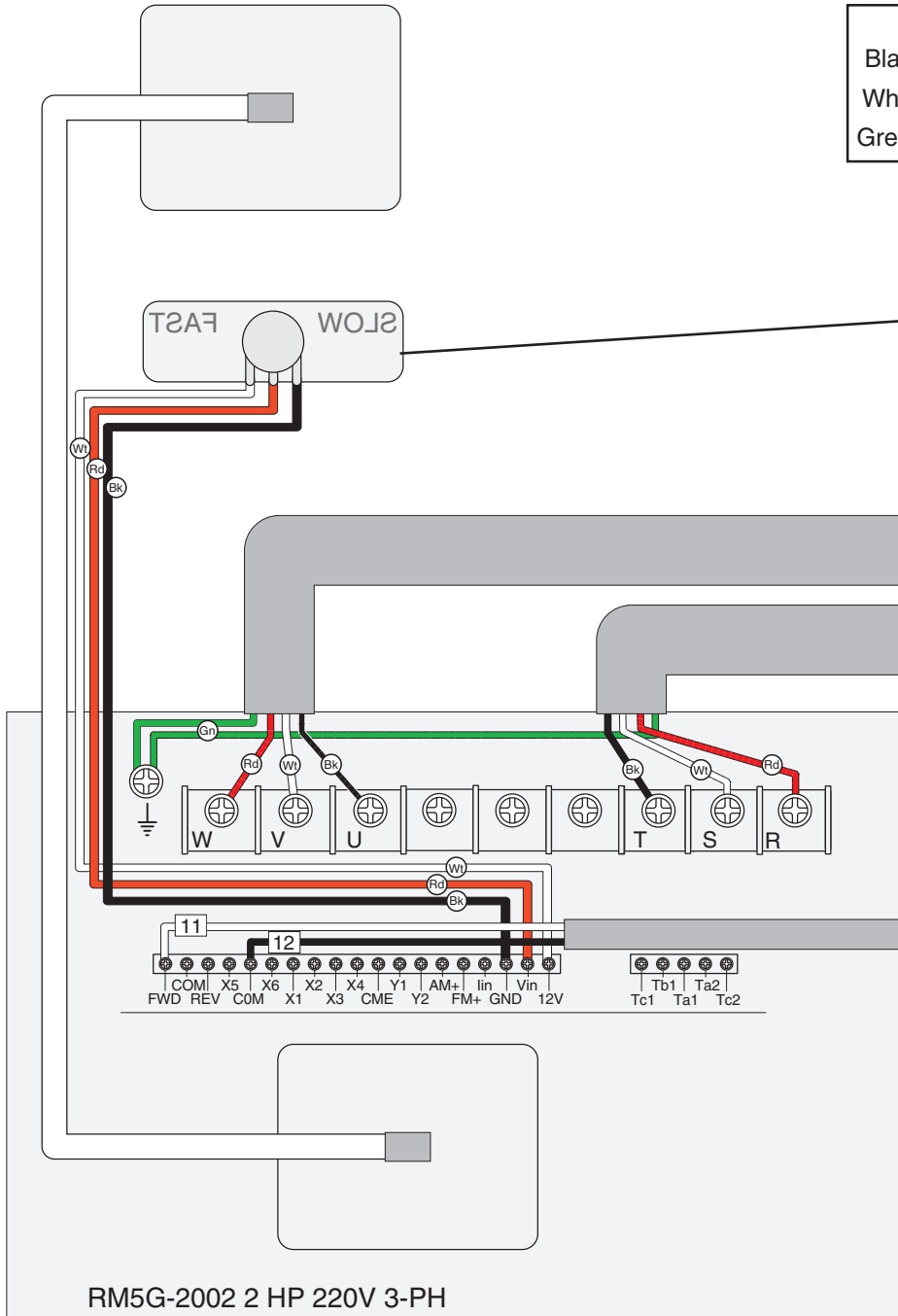


Figure 1. Welding station wiring.



Revised Inverter Wiring Diagram



COLOR KEY			
Black		Red	
White		Blue	
Green		Yellow	



Figure 54. Variable speed dial wiring.

To Motor
(see Photo & Wiring Diagram on Page 45)

To Electrical Panel
(see **Figure 57** on **Page 44**, Wiring Diagram on **Page 42**)

RM5G-2002 2 HP 220V 3-PH

Inverter
(see **Figure 56** on **Page 44**)



⚠ WARNING!

SHOCK HAZARD!
Disconnect power before working on wiring.





Revised Electrical Components

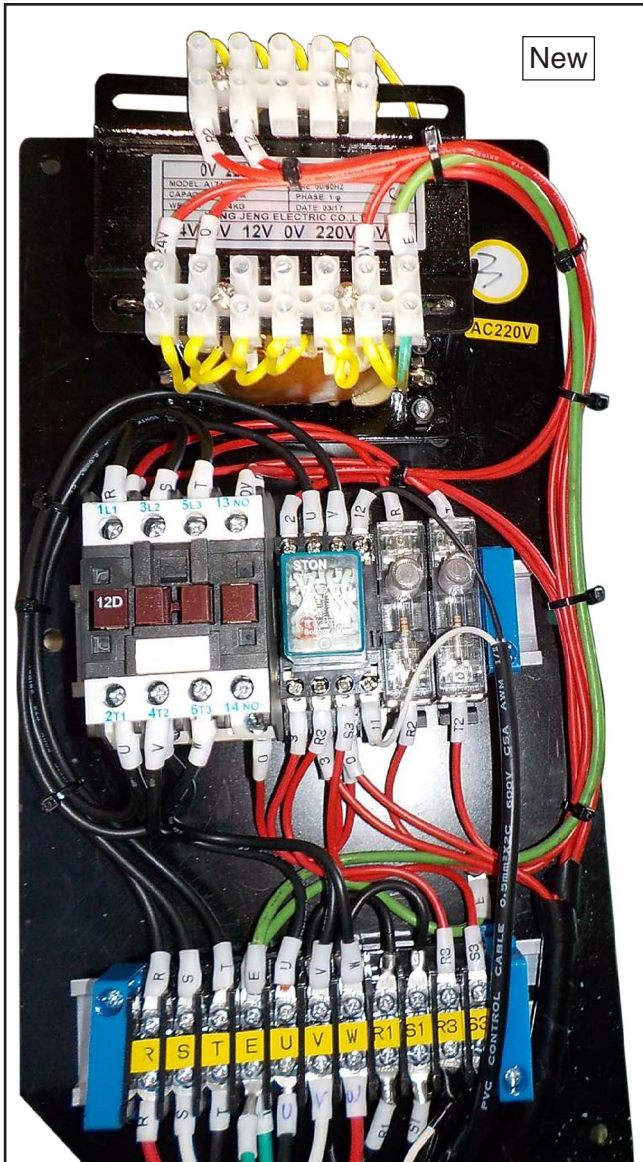


Figure 2. Main electrical wiring with new transformer.

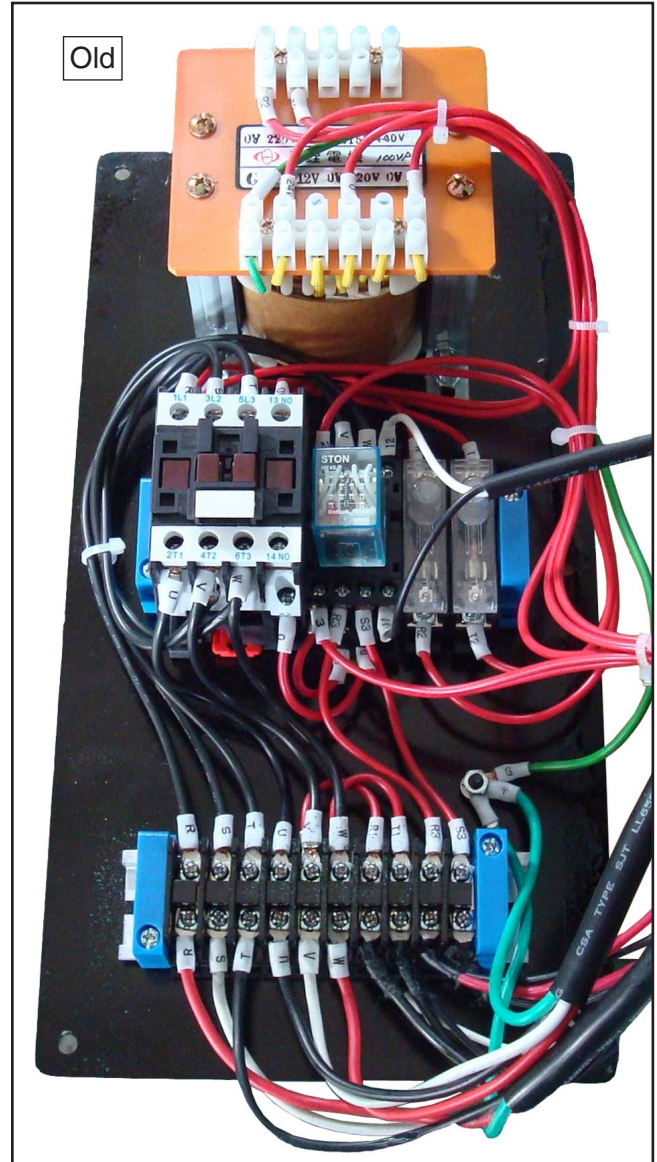


Figure 3. Main electrical wiring with old transformer.



Revised Electrical Components (Cont.)

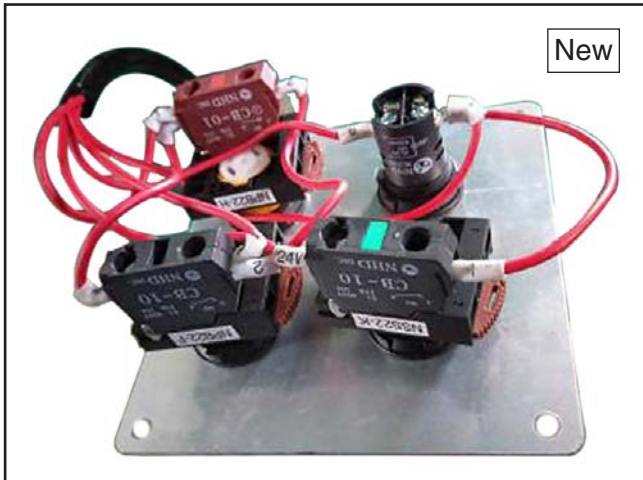


Figure 4. New control panel wiring.

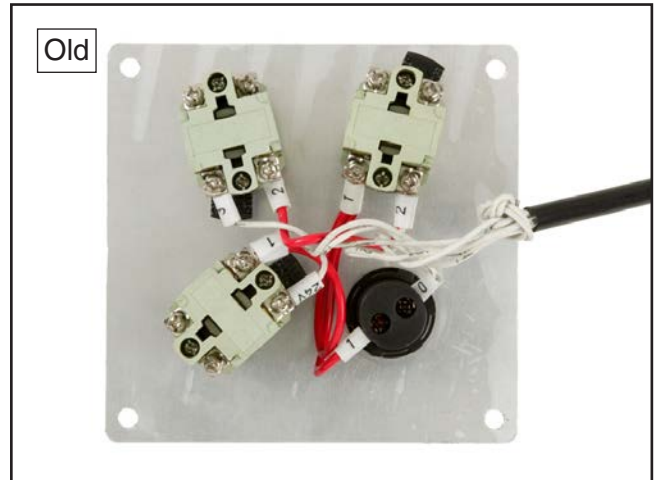


Figure 5. Old control panel wiring.

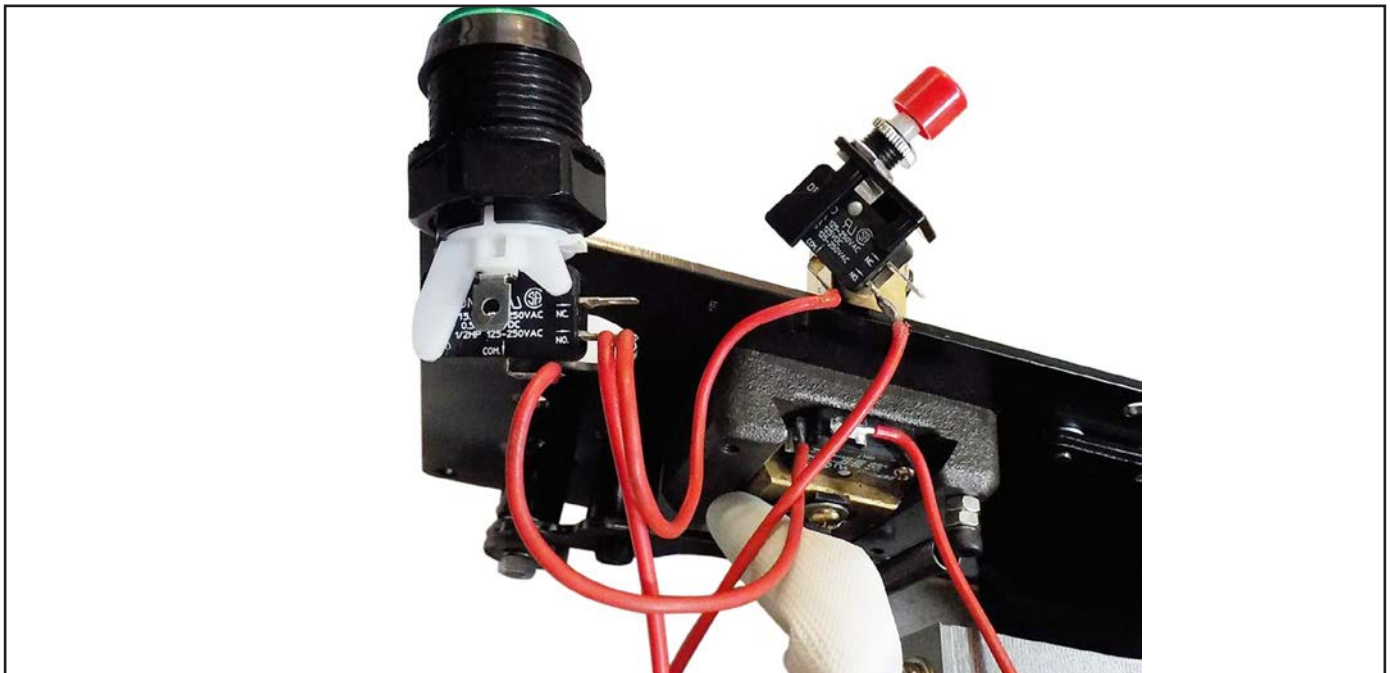


Figure 6. New annealing and welding buttons.



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Model G0668

*****IMPORTANT UPDATE*****

For Machines Mfd. Since 12/14
and Owner's Manual Printed 02/08

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

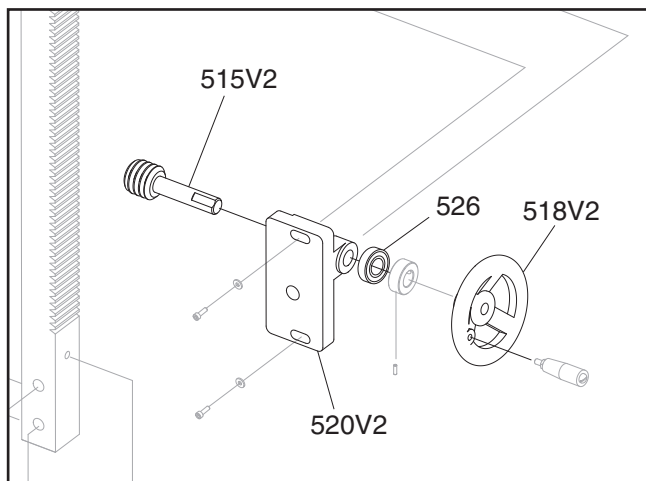
The following change was recently made to this machine since the owner's manual was printed:

- Redesigned guide post elevation handwheel, bracket, worm gear, and added a ball bearing.

Aside from this information, all other content in the owner's manual applies and **MUST** be read and understood for your own safety. **IMPORTANT: Keep this update with the owner's manual for future reference.**

For questions or help, contact our Tech Support at (570) 546-9663 or techsupport@grizzly.com.

New/Revised Parts



REF	PART #	DESCRIPTION
515V2	P0668515V2	WORM GEAR W/9MM SHAFT V2.12.14
518V2	P0668518V2	HANDWHEEL W/9MM BORE V2.12.14
520V2	P0668520V2	BRACKET W/9MM BORE V2.12.14
526	P0668526	BALL BEARING 609ZZ

Note: If replacing older V1 parts with V2 parts, you must replace the worm gear, bearing, bracket, and handwheel as a set.

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Model G0668

IMPORTANT UPDATE

For Machines Mfg. Since February, 2013
and Owner's Manual Printed February, 2008

The following change was made to this machine since the owner's manual was printed:

- The blade shear was improved to a more heavy-duty version (see **Figure 1**).

This document provides an update to a portion of the owner's manual that no longer applies—aside from this information, all other content in the owner's manual applies and **MUST** be read and understood for your own safety. **IMPORTANT: Keep this update with the owner's manual for future reference.**

For questions or help, contact our Tech Support at (570) 546-9663 or techsupport@grizzly.com.

Changed Parts

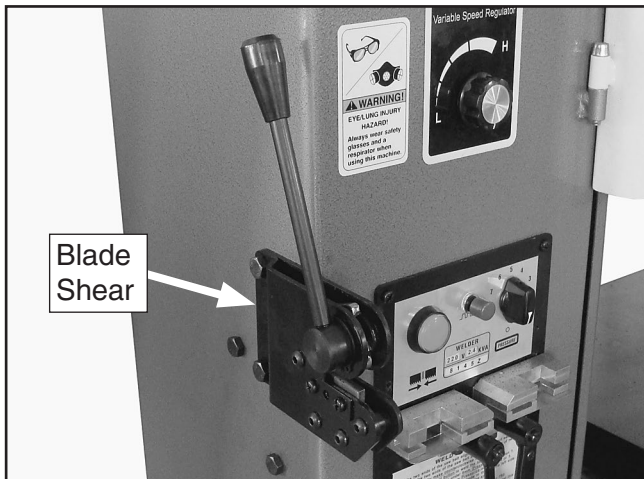
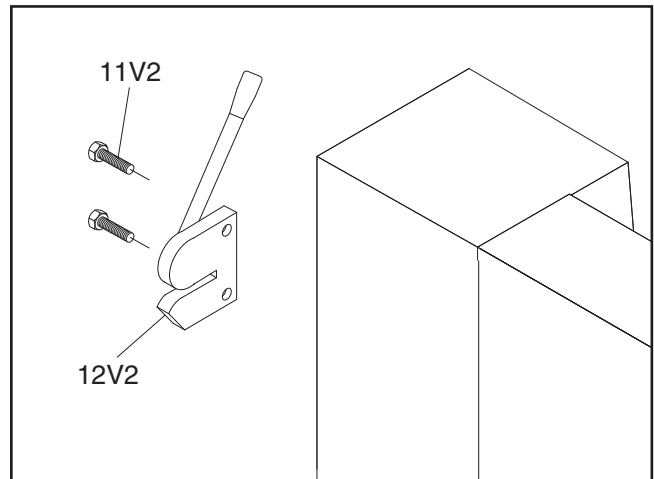


Figure 1. Heavy-duty blade shear.



REF	PART #	DESCRIPTION
11V2	PB06M	HEX BOLT M8-1.25 X 12
12V2	P8144Z012V2	BLADE SHEAR V2.02.13

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Model G0668

IMPORTANT UPDATE

Applies to Models Mfg. Since 10/11
and Owner's Manual February, 2008

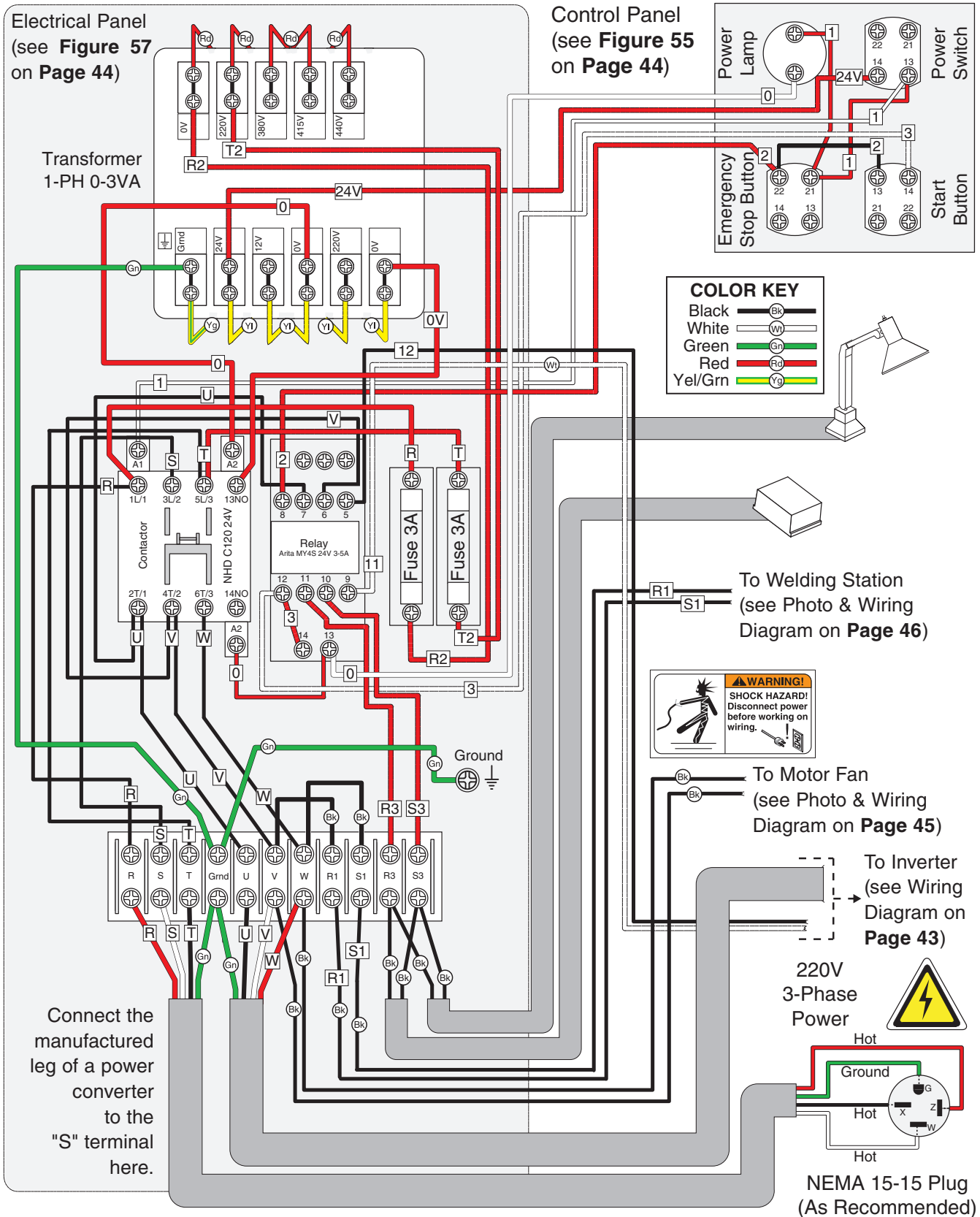
We recently made the following changes to the Model G0668:

- Electrical & Control Panel Wiring Diagram (**Page 42**).
- Inverter Wiring Diagram (**Page 43**).
- Welding Station Wiring Diagram (**Page 46**).
- Variable speed dial wiring image (**Page 43, Figure 54**).
- Inverter/Controller box wiring image (**Page 44, Figure 56**).
- Main electrical wiring image (**Page 44, Figure 57**).
- Welding station wiring image (**Page 46, Figure 59**).
- Cabinet parts breakdown and parts list (**Page 47**).

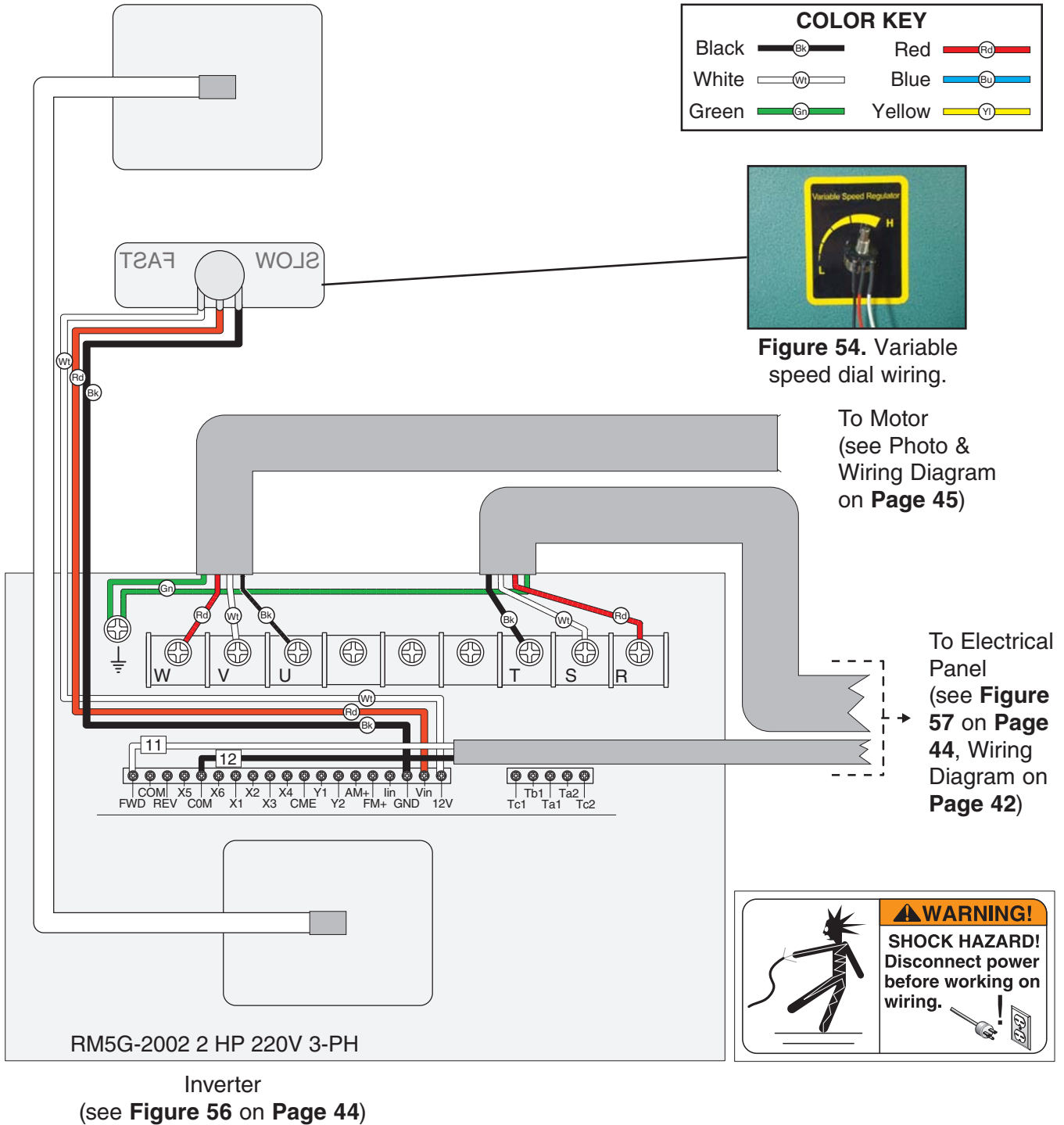
Aside from the information contained in this update, all other content in the owner's manual applies to this machine. For your own safety, you **MUST** read and understand this update and the applicable owner's manual. **Keep this update for future reference!**

If you have any further questions about this manual update or the changes made to the machine, contact our Technical Support at (570) 546-9663 or email techsupport@grizzly.com.

Revised Electrical & Control Panel Wiring Diagram



Revised Inverter Wiring Diagram



Electrical Components

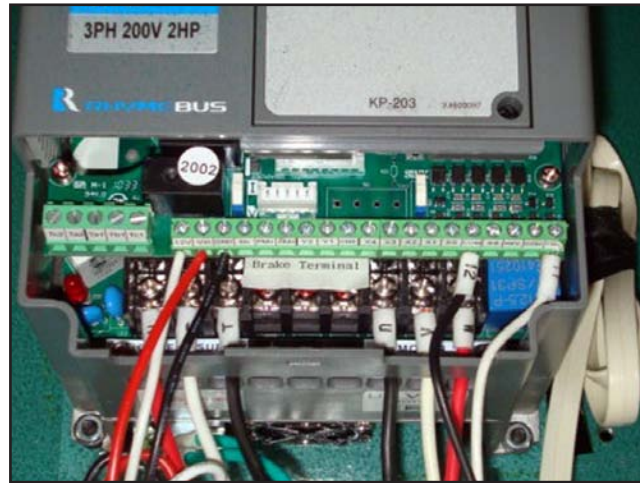


Figure 56. Inverter/Controller box wiring (see wiring diagram on **Page 43**).

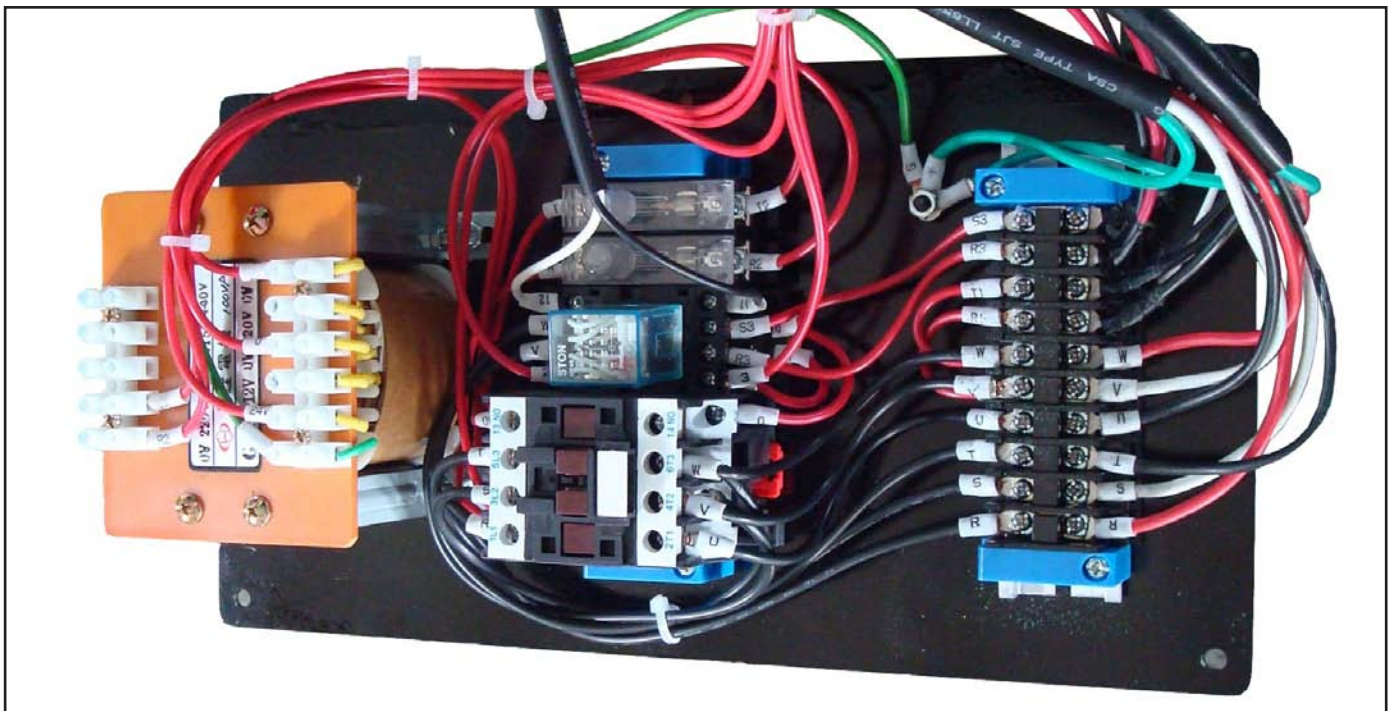


Figure 57. Main electrical wiring (see wiring diagram on **Page 42**).



Welding Station Wiring Diagram

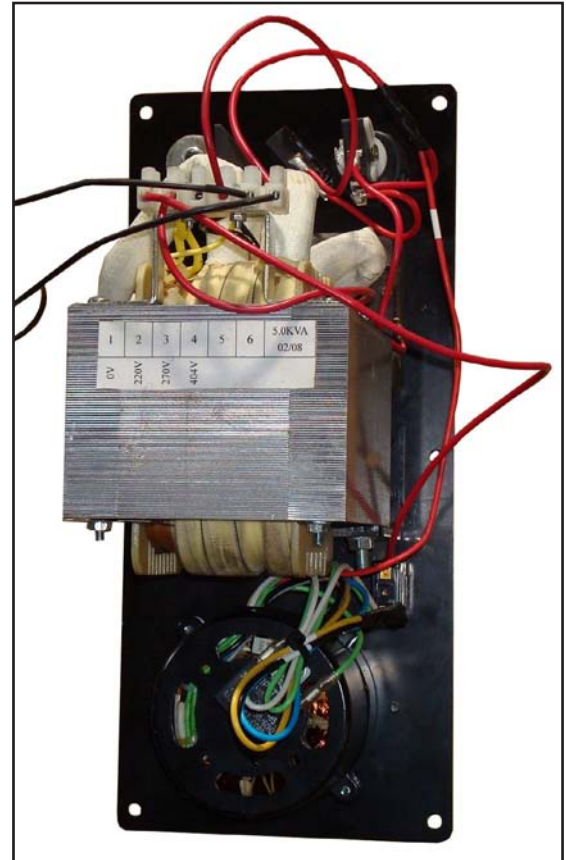
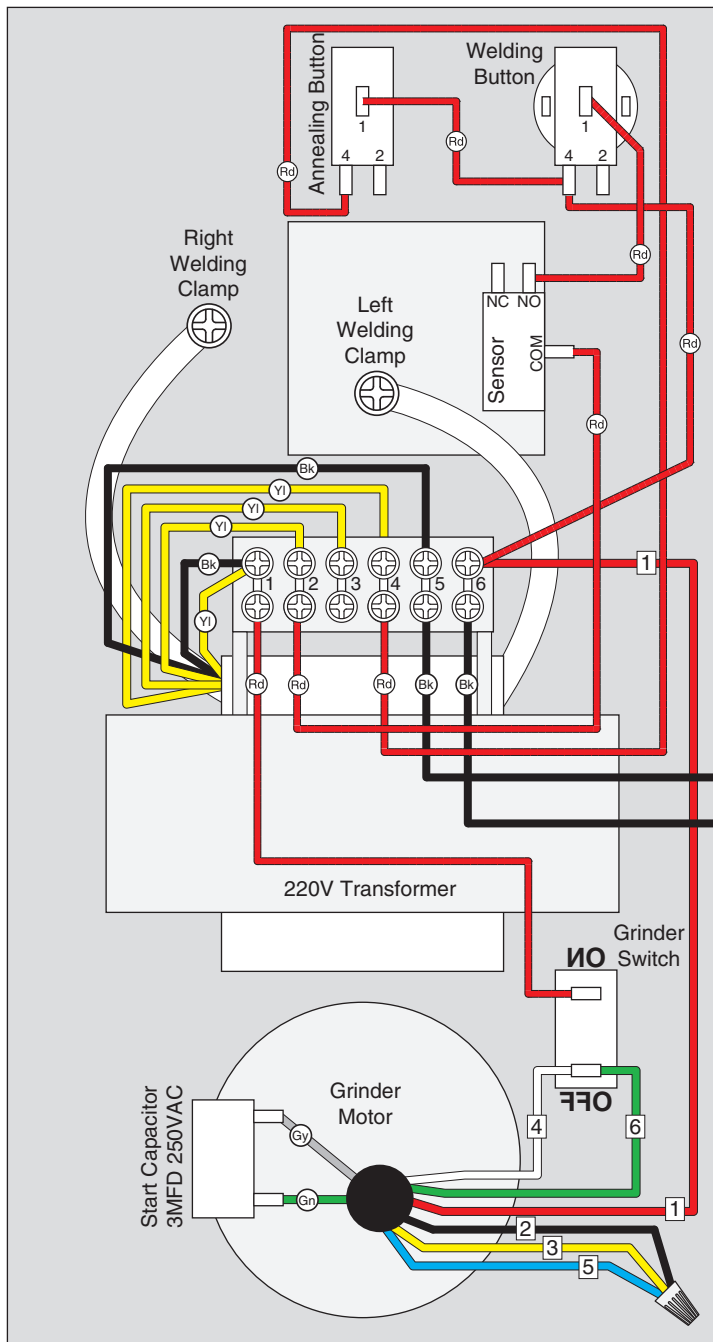


Figure 59. Welding station wiring.

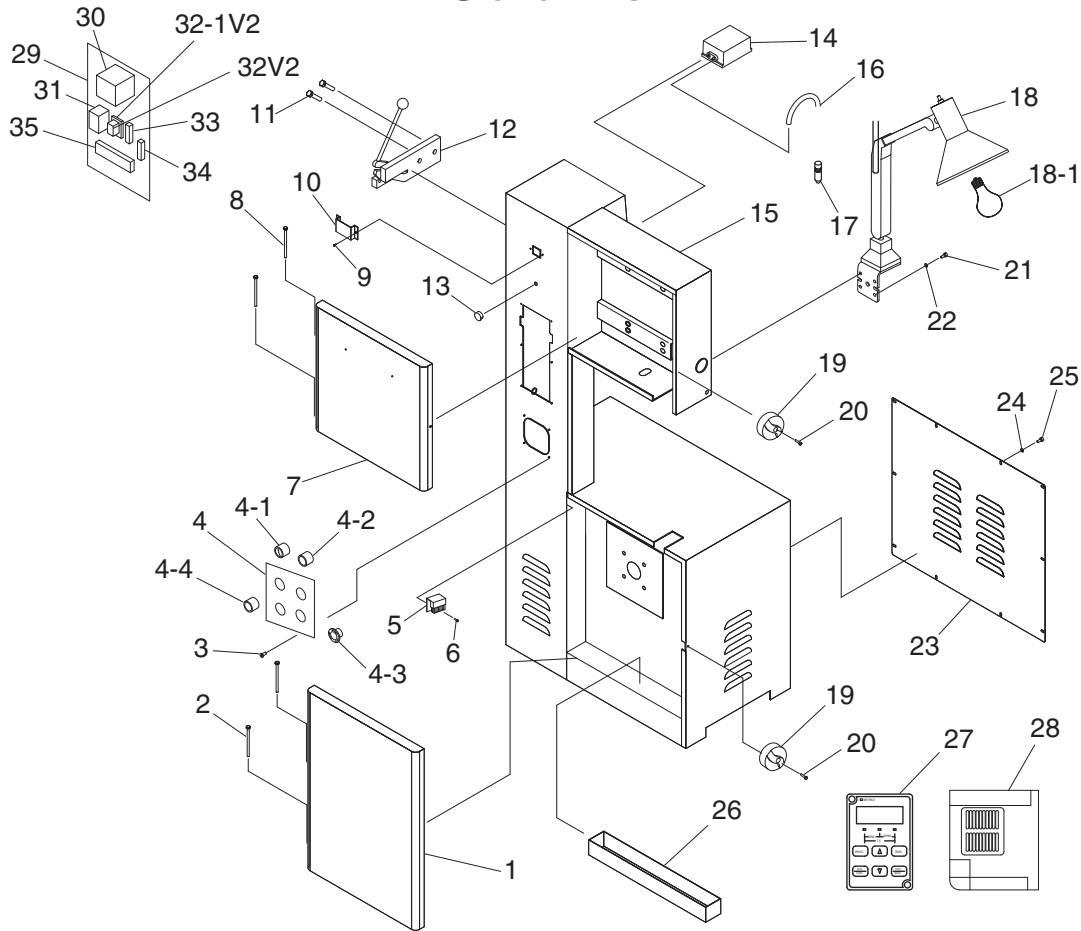
S1
 R1
 To Electrical Panel
 (see Page 42)

COLOR KEY			
Black		Red	
White		Gray	
Green		Yellow	
Blue			



SECTION 8: PARTS

Cabinet



REF	PART #	DESCRIPTION
1	P0668001	WHEEL DOOR LOWER
2	P0668002	HINGE PIN LOWER
3	PS05M	PHLP HD SCR M5-.8 X 8
4	P0668004	CONTROL PANEL
4-1	P0668004-1	POWER SWITCH W/KEY
4-2	P0668004-2	POWER LAMP
4-3	P0668004-3	EMERGENCY STOP BUTTON
4-4	P0668004-4	MOTOR ON BUTTON
5	P0668005	BLADE CLEANING BRUSH
6	PS47M	PHLP HD SCR M6-1 X 25
7	P0668007	WHEEL DOOR UPPER
8	P0668008	HINGE PIN UPPER
9	PS05M	PHLP HD SCR M5-.8 X 8
10	P0668010	DIGITAL DISPLAY BRACKET
11	PSB11M	CAP SCREW M8-1.25 X 16
12	P0668012	BLADE SHEAR
13	P0668013	VARIABLE SPEED DIAL
14	P0668014	AIR PUMP
15	P0668015	BANDSAW CABINET
16	P0668016	AIR HOSE 4X6MM
17	P0668017	AIR NOZZLE

REF	PART #	DESCRIPTION
18	P0668018	WORK LAMP 220V
18-1	P0668018-1	LIGHT BULB 220V
19	P0668019	DOOR KNOB
20	PS47M	PHLP HD SCR M6-1 X 25
21	PSB28M	CAP SCREW M6-1 X 15
22	PW03M	FLAT WASHER 6MM
23	P0668023	MOTOR ACCESS PANEL
24	PW03M	FLAT WASHER 6MM
25	PB04M	HEX BOLT M6-1 X 10
26	P0668026	CHIP PAN
27	P0668027	DIGITAL DISPLAY
28	P0668028	INVERTER RM5G 2HP 220V 3PH
29	P0668029	CONTROL PANEL
30	P0668030	TRANSFORMER 1PH 0-3VA
31	P0668031	CONTACTOR NHD C120D 220V
32V2	P0668032V2	RELAY STON MY4S 24V 3-5A
32-1V2	P0668032-1V2	RELAY HOLDER STON PYF14AE
33	P0668033	FUSE HOLDER
34	P0668034	FUSE 3A
35	P0668035	TERMINAL BLOCK 11-POST



Grizzly **Industrial, Inc.**®

MODEL G0668 20" VERTICAL METAL-CUTTING BANDSAW OWNER'S MANUAL



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WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.

Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.

The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.



WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

Foreword

We are proud to offer the Model G0668 20" Vertical Metal-Cutting Bandsaw. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0668 when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
c/o Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: <http://www.grizzly.com>





MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G0668 20" VARIABLE SPEED VERTICAL METAL CUTTING BANDSAW

Product Dimensions:

Weight 1145 lbs.
Length/Width/Height 47¼" x 29½" x 77⅞"
Foot Print (Length/Width)..... 41¾" x 20¾"

Shipping Dimensions:

Type Wood & Cardboard
Content..... Machine
Weight..... 1321 lbs.
Length/Width/Height..... 47¾" x 33½" x 86⅝"

Electrical:

Switch..... ON/OFF Push Button w/ Safety Lockout Key
Switch Voltage 220V
Cord Length 6½ ft.
Cord Gauge 14 gauge
Required Power Source..... 220V, 3-Phase
Recommended Circuit Size 15A
Included Plug No

Motors:

Bandsaw

Type..... TEFC Capacitor Start Induction
Horsepower 2 HP
Voltage 220V
Phase 3-Phase
Amps 6.6A
Pole/Speed 6 Pole/1175 RPM
Cycle..... 60 Hz
Number Of Speeds..... 1
Power Transfer Belt Drive
Bearings Shielded and Permanently Sealed

Grinder

Type..... TEFC Capacitor Start Induction
Horsepower ⅛ HP
Voltage 220V
Phase Single-Phase
Amps 0.6A
Speed 3450 RPM
Cycle..... 60 Hz
Number Of Speeds..... 1
Power Transfer..... Direct Drive
Bearings Sealed and Lubricated



Main Specifications:

Operation Information

Number of Blade Speeds	Variable
Blade Speed Range	105–2102 FPM
Blade Size Range.....	1/8"–3/4"
Blade Length Range.....	154 1/2"–159 3/4"

Cutting Capacity

Maximum Cutting Height.....	12 5/8"
Cutting Capacity Left of Blade.....	19 3/4"

Table Information

Table Tilt.....	15° Left, 45° Right
Table Size (Length/Width/Thickness).....	23 1/2" x 21 5/8" x 2"
Floor to Cutting Surface of Table	36 5/8"

Construction

Table.....	Precision Ground Cast Iron
Wheels.....	Fully-Balanced Cast Iron
Tires.....	Rubber
Blade Guides.....	Tungsten Steel
Body	Cast Iron
Base	Pre-Formed Steel
Wheel Covers.....	Pre-Formed Steel
Paint	Polyurethane

Other Related Information

Wheel Diameter.....	20"
Electric Blade Welder.....	220V, 4.2KVA
Annealing Voltage	220V
Mobile Base.....	G7314

Other Specifications:

Country Of Origin.....	Taiwan
Warranty.....	1 Year
Serial Number Location	ID Label on Upper Wheel Cover
Assembly Time	60 minutes

Features:

- Station for Joining Blade Ends, Includes Cut-Off Blades, Electric Welder w/ Clamp, Annealer, and Grinder
- Variable Cutting Speeds w/ Digital Read-Out
- Lower Wheel Cleaning Brush
- Work Light



Identification

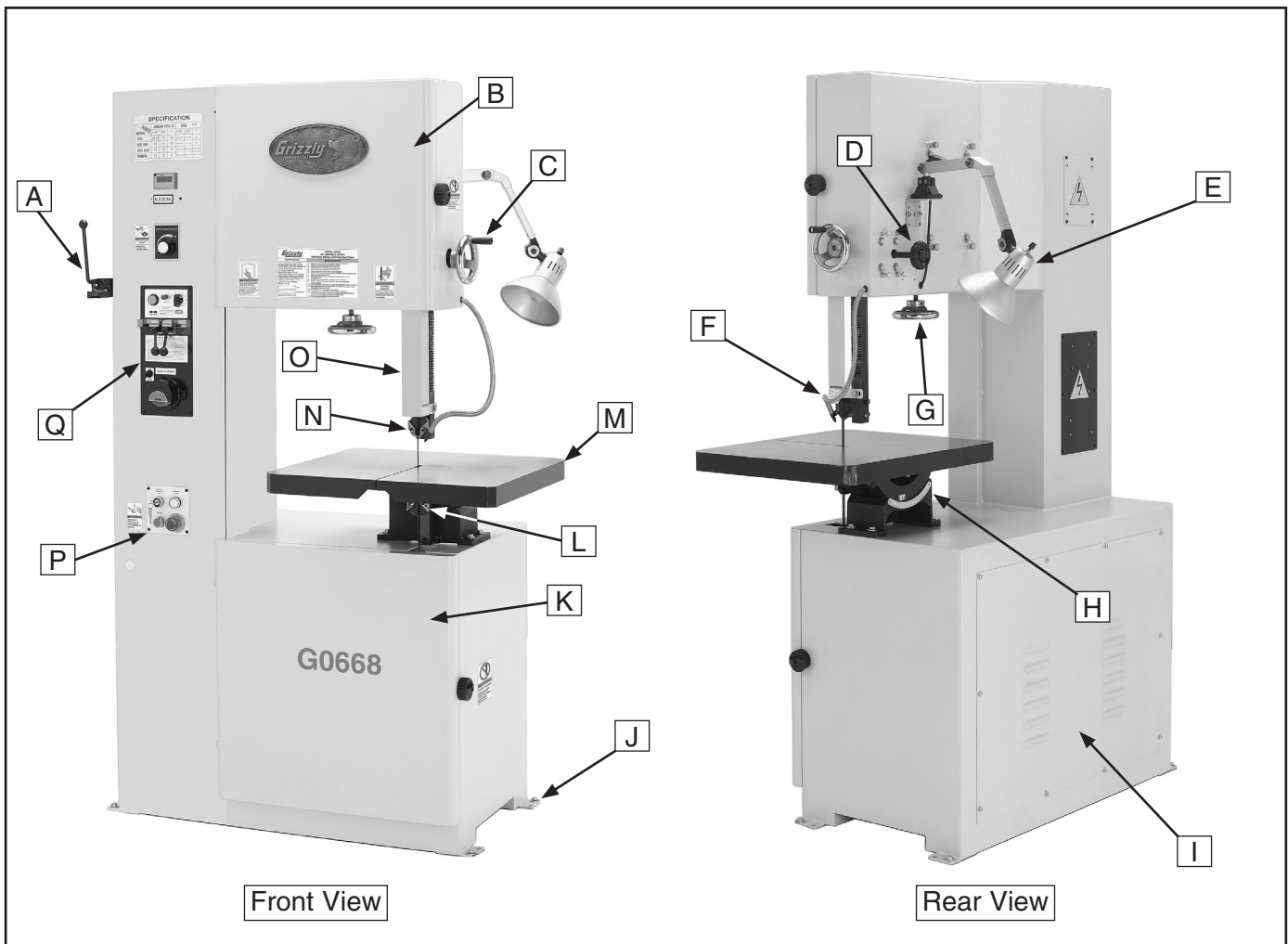
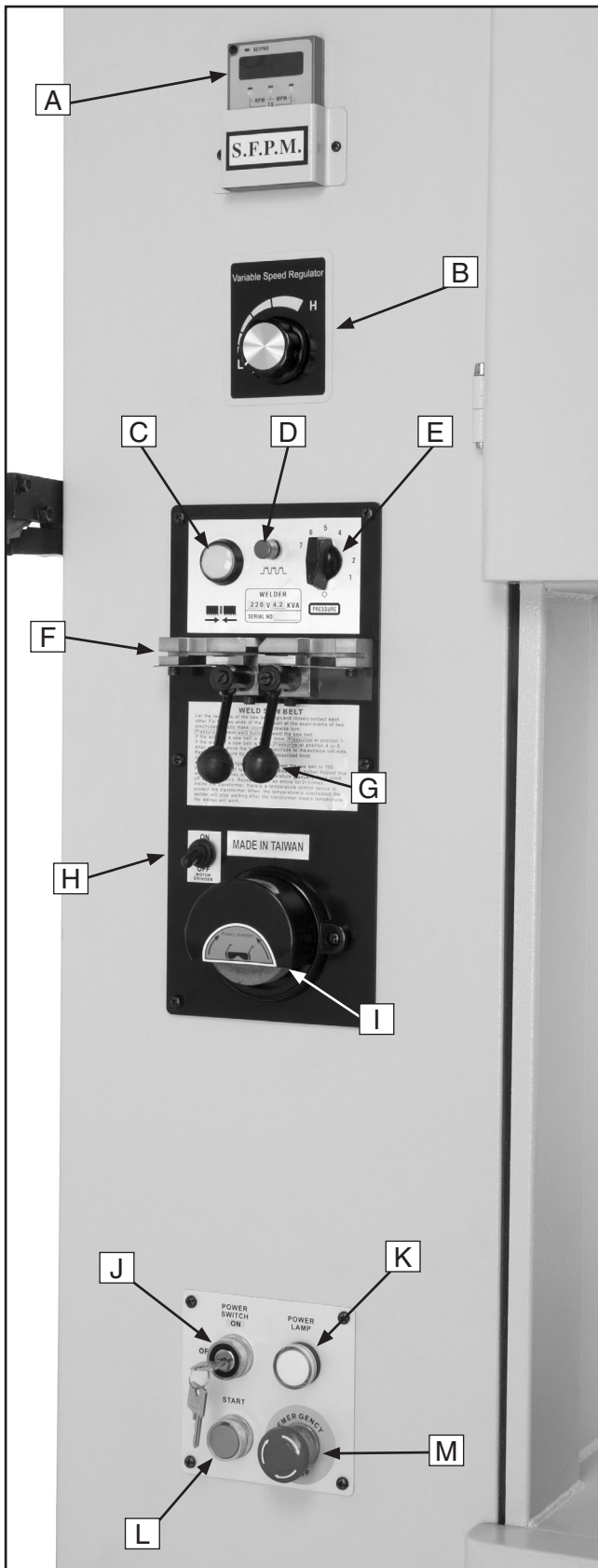


Figure 1. Model G0668 identification.

- | | |
|--|---------------------------------------|
| A. Blade Shear | J. Machine Mounting Flange |
| B. Upper Wheel Door | K. Lower Wheel Door |
| C. Guide Post Elevation Handwheel | L. Lower Blade Guide Assembly |
| D. Guide Post Lock Knob | M. Table |
| E. Work Light (220V) | N. Upper Blade Guide Assembly |
| F. Air Hose & Jet | O. Guide Post and Blade Guard |
| G. Blade Tension Handwheel | P. Bandsaw Power Control Panel |
| H. Table Tilt Scale | Q. Blade Welding Station |
| I. Motor Access Panel | |



Control Panel Identification



- A. Digital Speed Display (FPM)
- B. Variable Speed Dial
- C. Welding ON Button
- D. Annealing ON Button
- E. Clamping Pressure Dial
- F. Welding Clamp
- G. Welding Clamp Lock Levers
- H. Grinding Wheel ON/OFF Switch
- I. Grinding Wheel
- J. Power Switch & Key
- K. Power Lamp
- L. Bandsaw Start Button
- M. Emergency Stop Button

Figure 2. Control panel identification.



SECTION 1: SAFETY

WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

This symbol is used to alert the user to useful information about proper operation of the machine.

WARNING

Safety Instructions for Machinery

- 1. READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
- 2. ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.
- 3. ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.
- 4. ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
- 5. WEAR PROPER APPAREL. DO NOT** wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
- 6. NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.



WARNING

Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.
8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.
9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.
10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power **OFF** and allow all moving parts to come to a complete stop before leaving machine unattended.
11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.
12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.
13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.
14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY.** Make sure switch is in OFF position before reconnecting.
15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**
17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery **ON**.
18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.
19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.
20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.
21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.
22. **DO NOT OVERREACH.** Maintain stability and balance at all times.
23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."
24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY.**
25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.



WARNING

Safety Instructions for Metal Cutting Bandsaws

- 1. BLADE CONDITION.** Do not operate with dull, cracked or badly worn blade that can break during operation or decrease the performance of the bandsaw. Inspect blades for cracks and missing teeth before each use.
- 2. BLADE REPLACEMENT.** Wear gloves to protect hands and safety glasses to protect eyes when replacing the blade. When replacing blades, make sure teeth face forward and down toward the table in the direction of blade travel.
- 3. WORKPIECE HANDLING.** Your hands can be drawn into the blade during operation if the workpiece moves unexpectedly. Always keep your hands a safe distance away from the moving blade.
- 4. FIRE HAZARD.** Use **EXTREME CAUTION** if cutting magnesium. Using the wrong cutting fluid will lead to chip fire and possible explosion.
- 5. WELDING AND GRINDING SAFETY.** The welding station represents a serious hazard. **DO NOT** touch any metal parts of the blade, welder, or machine when activating the welder. Keep your hands a safe distance away from the grinding wheel when in use.
- 6. HOT SURFACES.** Be aware that touching hot workpieces or chips after welding, grinding, or cutting can cause burns.
- 7. CUTTING FLUID SAFETY.** Cutting fluids are poisonous. Always follow manufacturer's cutting-fluid safety instructions. Pay particular attention to contact, contamination, inhalation, storage and disposal warnings. Spilled cutting fluid invites slipping hazards.
- 8. ENTANGLEMENT HAZARDS.** Always keep the blade guard correctly positioned and wheel doors closed and secured when bandsaw is in operation. Loose clothing, jewelry, long hair and work gloves can be drawn into working parts.
- 9. MAINTENANCE/SERVICE.** All inspections, adjustments, and maintenance are to be done with the power **OFF** and the plug pulled from the outlet. Wait for all moving parts to come to a complete stop.
- 10. ROUND/UNSTABLE WORKPIECES.** Workpieces that cannot be supported or stabilized without a vise or jig should not be cut on a vertical metal-cutting bandsaw, because they can unexpectedly move while cutting and draw the operator's hands into the blade causing serious personal injury. Examples are chains, cables, round or oblong-shaped workpieces, workpieces with internal or built-in moving or rotations parts, etc.
- 11. EXPERIENCING DIFFICULTY.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support Department at (570) 546-9663.

CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

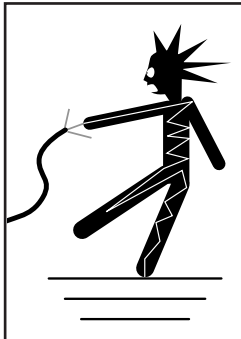


SECTION 2: CIRCUIT REQUIREMENTS

220V 3-Phase Operation

!WARNING

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



!WARNING

Electrocution or fire could result if machine is not grounded and installed in compliance with electrical codes. Compliance **MUST** be verified by a qualified electrician!

Full Load Amperage Draw

Motor Draw at 220V 7 Amps

Power Supply Circuit Requirements

You **MUST** connect your machine to a grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Minimum Circuit 220V 3-Phase..... 15 Amps

Power Connection Device

The type of plug required to connect your machine to power depends on the type of service you currently have or plan to install. We recommend using the plug shown in **Figure 3**.

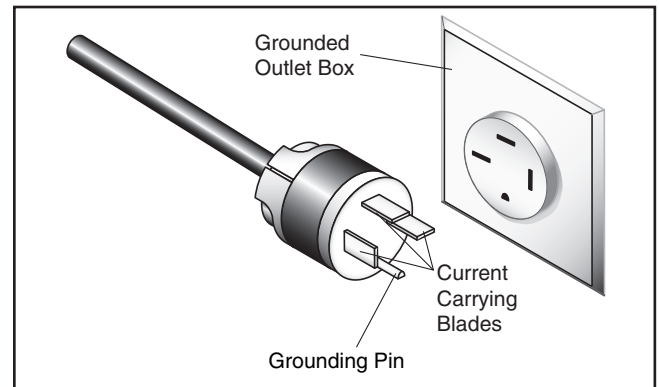


Figure 3. NEMA 15-15 plug and receptacle.

Extension Cords

Using extension cords may reduce the life of the motor. Instead, place the machine near a power source. If you must use an extension cord:

- Use at least a 14 gauge cord that does not exceed 50 feet in length!
- The extension cord must also have a ground wire and plug pin.
- A qualified electrician **MUST** size cords over 50 feet long to prevent motor damage.

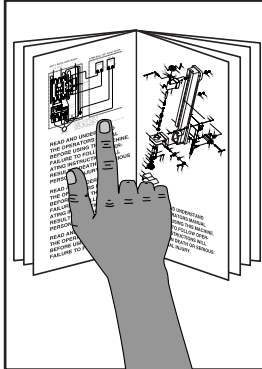
Phase Converter Precaution

The power from the manufactured leg of a phase converter may damage electrical components if connected to the wrong incoming power terminal on your machine. Only connect the manufactured leg to the S terminal (see the **Electrical & Control Wiring Diagram** on **Page 42** for identification).



SECTION 3: SETUP

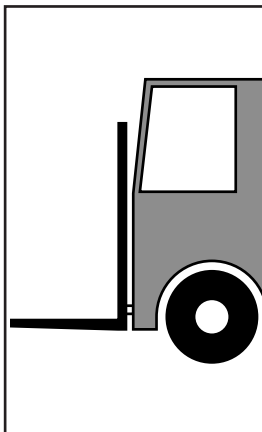
Setup Safety



!WARNING
This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



!WARNING
Wear safety glasses or a face shield during the entire setup process!



!WARNING
This bandsaw is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for over 1500 lbs. to move the shipping crate and remove the machine from the crate.

Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Assistants	2
• Safety Glasses (for each person)	1
• Lifting Straps (rated for 1500 lbs.)	2 Or More
• Forklift (rated for 1500 lbs.)	1
• Floor Mounting Hardware	As Needed

Unpacking

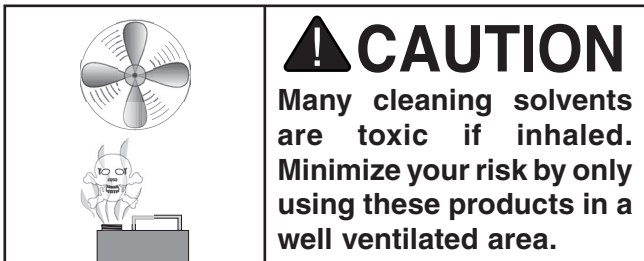
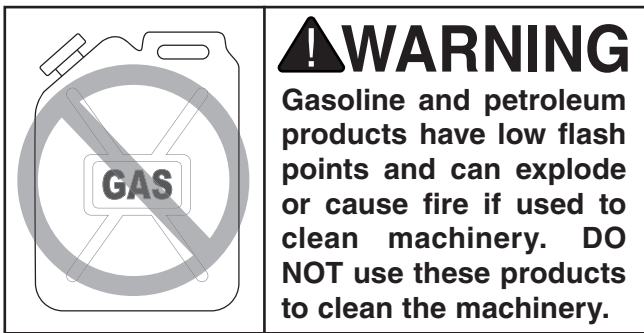
Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*



Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or degreaser shown in **Figure 4**. For thorough cleaning, some parts must be removed. **For optimum performance from your machine, clean all moving parts or sliding contact surfaces.** Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.



G2544—Solvent Cleaner & Degreaser
A great product for removing the waxy shipping grease from your machine during clean up.



Figure 4. Cleaner/degreaser available from Grizzly.

Site Considerations

Floor Load

Refer to the **Machine Data Sheet** on **Page 3** for the weight and footprint specifications of your machine. Some floors may require additional reinforcement to support both the machine and operator.

Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 5** for the minimum working clearances.

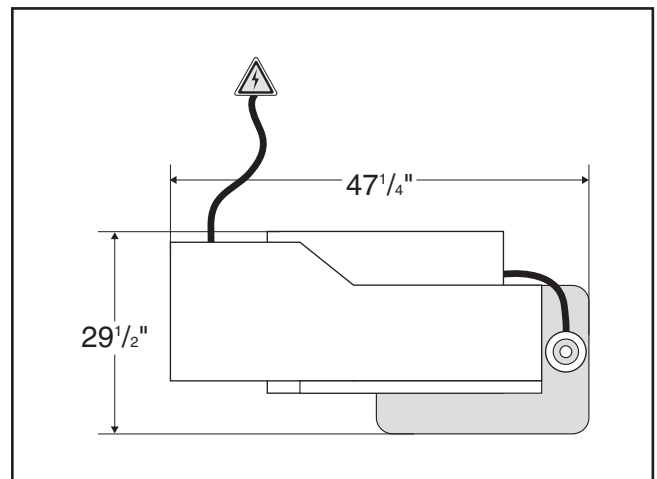


Figure 5. Minimum working clearances (top view).



Mounting to Shop Floor

The bandsaw center of gravity is above the middle of the machine. Although not required, we strongly recommend that you mount your new machine to the floor to prevent tipping. Because this is an optional step and floor materials may vary, floor mounting hardware is not included.

Bolting to Concrete Floors

Anchor studs and lag bolts (Figure 6) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag bolts; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.

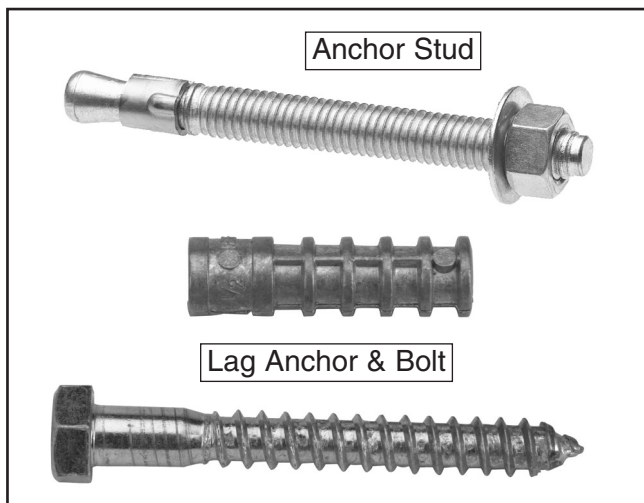
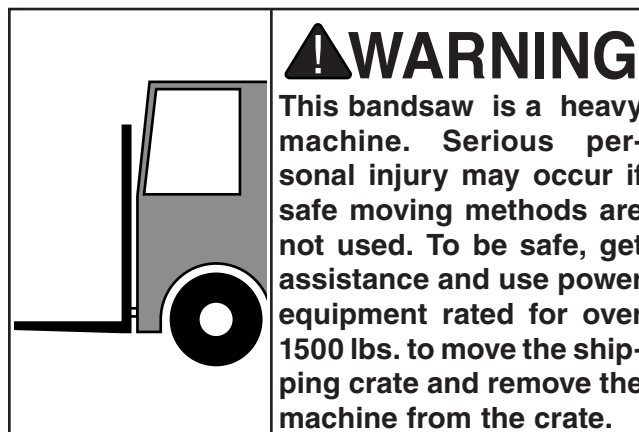


Figure 6. Typical fasteners for mounting to concrete floors.

NOTICE

We strongly recommend securing your machine to the floor if it is hardwired to the power source. Consult with your electrician to ensure compliance with local codes.

Moving & Placing



To lift and move the bandsaw:

1. Position lifting straps under the head of the bandsaw and on the forklift forks, as shown in Figure 7.



Figure 7. Lifting straps positioned on bandsaw.

WARNING

Only use lifting straps and power lifting equipment rated for at least 1500 lbs. and in good working condition. If the bandsaw falls or tips over while moving it, serious personal injury and property damage could result.



2. Unbolt the bandsaw from the pallet.
3. With two assistants to steady the bandsaw, slowly lift it just enough to clear the pallet and floor obstacles, then move it to the prepared location.
4. Use shims between the machine mounting flanges and the floor to level the bandsaw.

Note: *Tighten the mounting fasteners evenly to avoid warping or cracking the base.*

Test Run

Once the bandsaw is in place, test run your machine to make sure it runs properly and is ready for regular operation. The test run consists of verifying the following: 1) The bandsaw motor powers up and runs correctly, and 2) the Emergency Stop button safety feature works correctly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting on Page 34**.

If you cannot find a remedy, contact our Tech Support at (570) 546-9663 for assistance.

To test run the bandsaw:

1. Read and follow the safety instructions at the beginning of the manual, and make sure the machine is setup properly.
2. Clear all tools and objects used during setup away from the machine, and make sure both wheel doors are closed and secured.
3. Make sure the blade is properly tensioned and the blade guides are positioned correctly (refer to **Blade Tensioning on Page 25**, and **Adjusting Blade Guides on Page 26** for detailed instructions).
4. Connect the machine to the power source.

5. Place the key in the Power Switch and turn it to the ON position—the Power Lamp should light.
6. Push the Emergency Stop button in, then twist it clockwise so it pops out. When the Emergency Stop button pops out, the switch is reset and ready for operation (see **Figure 8**).

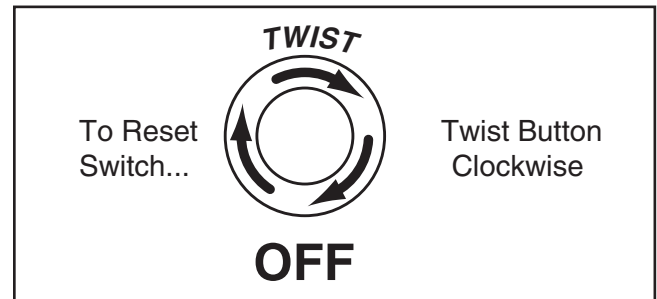


Figure 8. Emergency stop button.

7. Push the Start button to turn the machine **ON**.
8. Verify that the machine is operating correctly.
 - When operating correctly, the machine runs smoothly with little or no vibration or rubbing noises.
 - Investigate and correct strange or unusual noises or vibrations before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.
9. Verify that the motor is running in the correct direction.
 - When the motor is running in the correct direction, the blade will be moving down into the table.
 - If the motor is NOT running in the correct direction, stop the machine, disconnect the machine from power, and switch any two incoming power leads inside the motor wiring junction box (refer to the **Motor Wiring Diagram on Page 45** for detailed illustrations).



10. Press the Emergency Stop button to stop the machine.
11. WITHOUT resetting the switch, press the Start button. The machine should not start.
 - If the machine does not start, the Emergency Stop button safety feature is working correctly.
 - If the machine does start (with the stop button pushed in), immediately disconnect power to the machine. The Emergency Stop button safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.
12. Reset the Emergency Stop button by twisting it clockwise until it pops out.
13. Turn the Power Switch key to the OFF position—the Power Lamp should go out.

WARNING

The Power Switch is intended to prevent unauthorized use of this machine. The Power Switch does not disconnect the bandsaw from power. To avoid the risk of serious personal injury, you **MUST physically disconnect the bandsaw from the power source before performing adjustments, maintenance, or service to this machine.**

14. Press the Start button.
 - If the machine does not start, the Power Switch safety feature is working correctly.
 - If the machine does start with the Power Switch key turned to the OFF position, immediately disconnect power to the machine. The Power Switch safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.

If all of the **Test Run** procedures were successful, your bandsaw is ready for operation.

Recommended Adjustments

For your convenience, the adjustments listed below have been performed at the factory.

However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine.

Step-by-step instructions for these adjustments can be found in the **SERVICE** section starting on **Page 34**.

Factory adjustments that should be verified:

1. Lower wheel pulley alignment (refer to **Page 36**).
2. Tensioning V-belts (refer to **Page 36**).

NOTICE

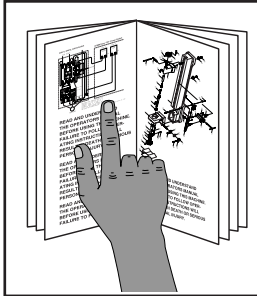
After the first 16 hours of operation, new V-belts will stretch and seat farther into the pulleys. To avoid slippage, re-tension new V-belts after this period.

3. Wheel alignment (refer to **Page 38**).
4. Table alignment relative to the blade (refer to **Page 40**).



SECTION 4: OPERATIONS

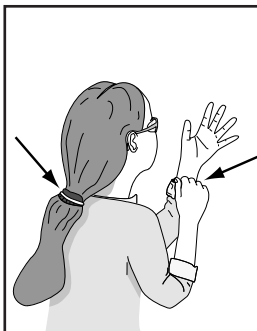
Operation Safety



!WARNING
To reduce the risk of serious injury when using this machine, read and understand this entire manual before beginning any operations.

!WARNING

Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.



!WARNING
Loose hair, clothing, or jewelry could get caught in machinery and cause serious personal injury. Keep these items away from moving parts at all times to reduce this risk.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Cutting Overview

The vertical metal cutting bandsaw has a flexible continuous blade that cuts in one direction. The type of bandsaw blade and the speed of the blade to be used depends on the workpiece material and the type of cut required.

This type of bandsaw can be used for straight cuts, angular cuts, curved or contour cuts, and internal cuts. Straight cuts are made using workpiece fixtures and with a light, even pressure against the blade. Angular cuts are made with the table and workpiece tilted at an angle other than "0".

When an internal cut is to be made, a hole must be drilled in the workpiece. The blade is then cut, fed through the hole in the workpiece, welded together again using the welding station, and re-installed on the bandsaw to make the cut. The welding station can also be used to fabricate new blades and repair broken blades.

The blade is supported by upper and lower tungsten steel blade guides that keep the blade from wandering during the cut.

The efficiency of the cutting operation can be easily checked by examining the shape and color of the metal chips.

!WARNING

Workpieces that cannot be supported or stabilized without a vise or jig should not be cut on a vertical metal-cutting bandsaw, because they can unexpectedly move while cutting and draw the operator's hands into the blade causing serious personal injury. Examples are chains, cables, round or oblong-shaped workpieces, workpieces with internal or built-in moving or rotations parts, etc.



Cutting Tips

- Keep the upper blade guides adjusted to approximately 1/4" above the workpiece to provide proper support for the blade during cutting operations.
- Replace, sharpen, and clean blades as necessary. Make adjustments periodically to keep the saw running in top condition.
- Use light and even pressure while cutting. Light contact with the blade makes it easier to follow lines and prevents extra friction.
- Avoid twisting the blade when cutting around tight corners. Use the proper width of blade for the radius of the corner and make relief cuts.
- Misusing the bandsaw or using incorrect techniques is unsafe and results in poor cuts. Remember—the blade does the cutting with the operator's guidance.
- Never start a cut with the blade in contact with the workpiece, and do not start a cut on a sharp edge of the workpiece.
- Pay attention to the characteristics of the chips when cutting—they are good indicators of proper blade speed and feed rate. **Figure 16** on **Page 23** shows the basic chip characteristics and what they mean.

WARNING

ELECTROCUTION HAZARD

This bandsaw is not designed to be used with water soluble cutting fluid or coolant. If needed, use a small amount of oil-based lubricant.

Workpiece Inspection

Some metal workpieces are not safe to cut with a vertical metal cutting bandsaw; instead, a different tool or machine should be used.

Before cutting, inspect the material for any of the following conditions and take the necessary precautions:

- **Small or Thin Workpieces:** Small or thin workpieces are dangerous to cut if held by hand—avoid cutting these workpieces if possible. If you must cut a small or thin workpiece, attach it to or clamp it between larger scrap pieces that will both support the workpiece through the cut and keep your fingers away from the blade. Some thin sheet metals will not withstand the forces from this bandsaw during cutting; instead, use a shear, nibblers, or sheet metal nippers to cut these pieces.
- **Round/Unstable Workpieces:** Workpieces that cannot be properly supported or stabilized without a vise or jig should not be cut on a vertical metal-cutting bandsaw. Examples are chains, cables, round or oblong-shaped workpieces, workpieces with internal or built-in moving or rotating parts, etc.
- **Material Hardness:** Always factor in the hardness of the metal before cutting it. Hardened metals will take longer to cut, may require lubrication, and may require a different type of blade in order to efficiently cut them.
- **Tanks, Cylinders, Containers, Valves, Etc:** Cutting into containers that are pressurized or contain gasses or liquids can cause explosions, fires, caustic burns, or machine damage. Avoid cutting any of these types of containers unless you have verified that the container is empty and it can be properly supported during a cut.
- **Magnesium:** Pure magnesium burns easily. Cutting magnesium with a dull blade can create enough friction to ignite the small magnesium chips. Avoid cutting magnesium if possible.



Basic Controls

Use the descriptions and **Figures 9–10** below to become familiar with the basic controls of your bandsaw.

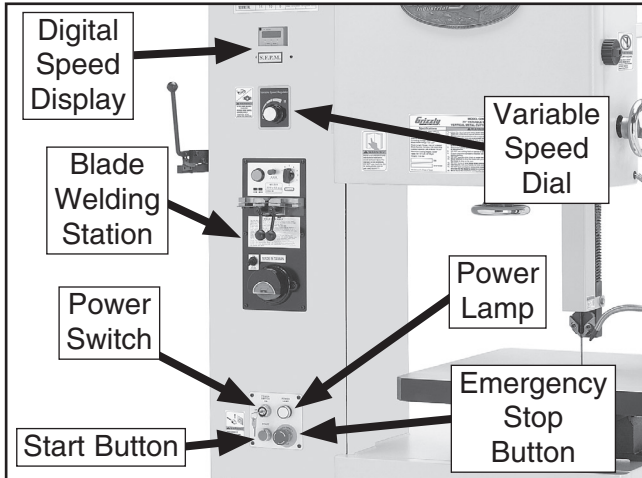


Figure 9. Electrical controls.

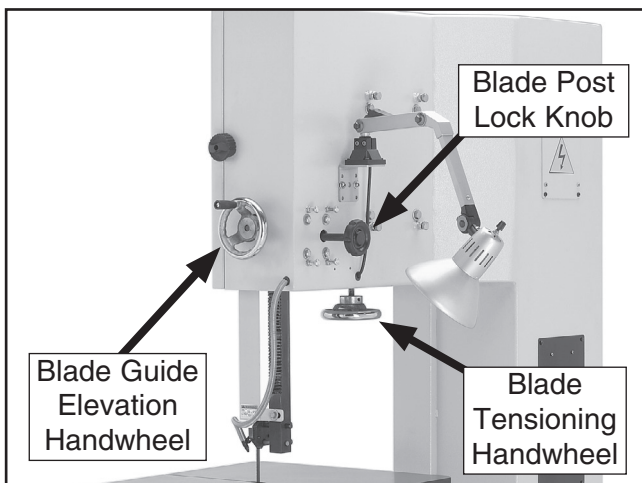


Figure 10. Blade controls.

Digital Speed Display: Shows blade speed in feet per minute (FPM).

Variable Speed Dial: Adjusts the blade speed between 105–2102 FPM.

Blade Welding Station: Welds two blade ends to make a continuous loop when repairing a broken blade, fabricating a new blade, or making internal cuts.

Power Switch: The main power switch for the entire machine.

Power Lamp: Lights when the Power Switch is turned **ON** and there is power to the machine.


Start Button: Turns the bandsaw motor **ON**.

Emergency Stop Button: Turns the bandsaw motor **OFF**.

Blade Post Lock Knob: Secures the blade post and upper blade guide assembly in position.

Blade Guide Elevation Handwheel: Raises/lowers the blade post and upper blade guide assembly when rotated.

Blade Tensioning Handwheel: Increases/decreases blade tension when rotated.

	<p>⚠ WARNING</p> <p>The bandsaw blade is sharp and can easily cut your hand or fingers. Always disconnect the power and wear heavy leather gloves when making adjustments to or near the blade.</p>
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Blade Selection

Selecting the right blade for the cut requires a knowledge of various blade characteristics.

Blade Terminology

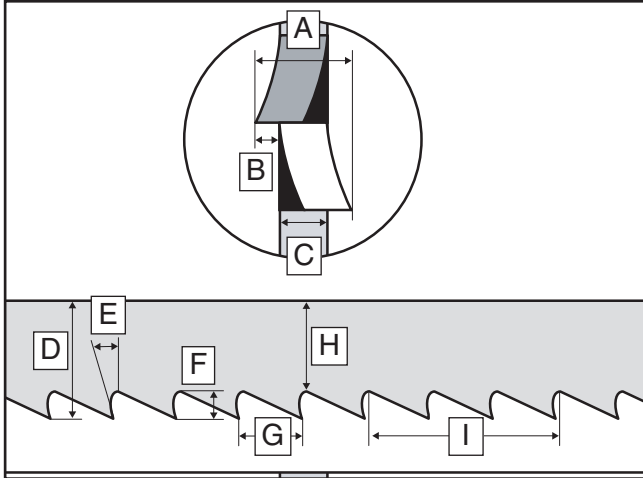


Figure 11. Bandsaw blade terminology.

- A. **Kerf:** The amount of material removed by the blade during cutting.
- B. **Tooth Set:** The amount each tooth is bent left or right from the blade.
- C. **Gauge:** The thickness of the blade.
- D. **Blade Width:** The widest point of the blade measured from the tip of the tooth to the back edge of the blade.
- E. **Tooth Rake:** The angle of the tooth face from a line perpendicular to the length of the blade.
- F. **Gullet Depth:** The distance from the tooth tip to the bottom of the curved area (gullet).
- G. **Tooth Pitch:** The distance between tooth tips.
- H. **Blade Back:** The distance between the bottom of the gullet and the back edge of the blade.
- I. **TPI:** The number of teeth per inch measured from gullet to gullet.

Blade Length

Measured by the blade circumference, blade lengths are usually unique to the brand of your bandsaw and the distance between the wheels.

G0668 Blade Length Range..... 154¹/₂"–159³/₄"

Blade Width

Measured from the back of the blade to the tip of the blade tooth (the widest point), blade width is often the first consideration given to blade selection. Blade width dictates the largest and smallest curve that can be cut, as well as how accurately it can cut a straight line—generally the wider the blade, the straighter it will cut. Always pick the blade width that best suits your operation.

G0668 Blade Width Range 1/8"–3/4"

Curve Cutting: Use the chart in **Figure 12** to choose the correct blade for curve cutting. Determine the smallest radius curve that will be cut on your workpiece and use the corresponding blade width.

The list below shows the minimum radius that can be cut by common blade widths.

Width	Radius
1/8"	1/8"
3/16"	3/8"
1/4"	5/8"
3/8"	1 1/4"
1/2"	2 1/2"
5/8"	3 3/4"
3/4"	5 1/2"

Figure 12. Blade width radii.



Tooth Set

Three common tooth sets are standard, wavy, and raker (see **Figure 13**), each removing material in a different manner to make the kerf in the workpiece.

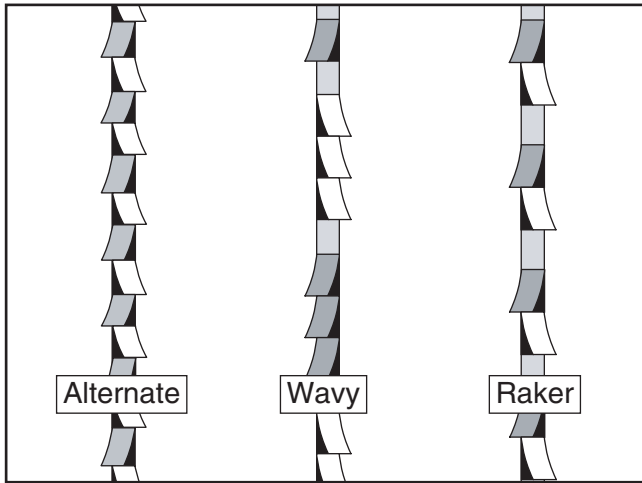


Figure 13. Bandsaw tooth sets.

Alternate: An all-purpose arrangement of bending the teeth evenly left and right of the blade. Generally used for milder metals.

Wavy: Generally three or more teeth in a group that are bent one way, followed by a non-set tooth, then another group bent the other way. Recommended for straight cuts in thin metals or thin-wall tubing.

Raker: Three teeth in a recurring group—one bent left, next one bent right, and then a non-set tooth. The raker is ideal for most contour cuts.

Tooth Type

The most common tooth types are described below and illustrated in **Figure 14**.

Standard or Raker: Equally spaced teeth set a "0" rake angle. Recommended for all purpose use.

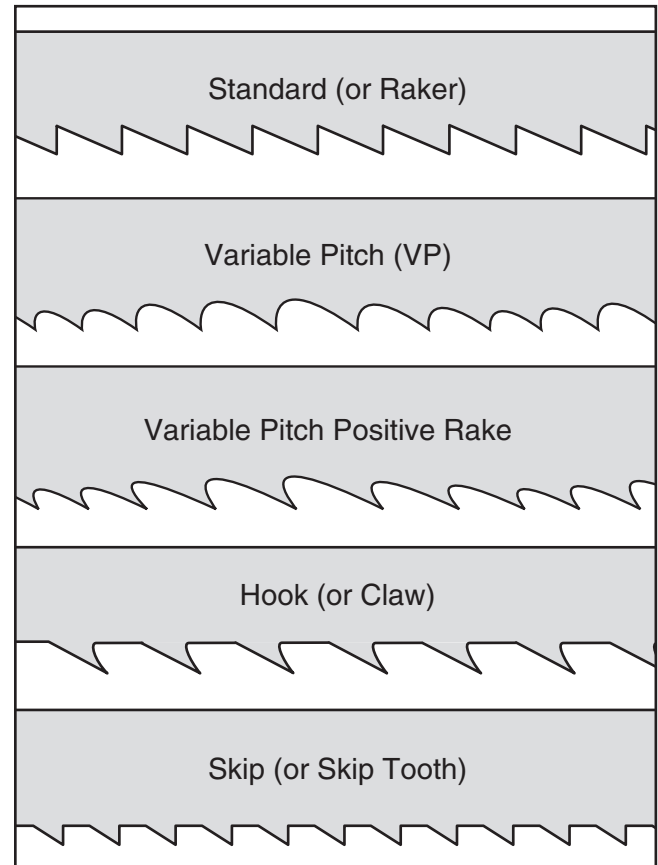


Figure 14. Bandsaw blade tooth types.

Variable Pitch (VP): Varying gullet depth and tooth spacing, a "0" rake angle, excellent chip removing capacity, and smooth cutting.

Variable Pitch with Positive Rake: Varying gullet depth and tooth spacing, a positive rake angle, better chip formation, and aggressive cutting.

Hook or Claw: Wide gullets (round or flat), equally spaced teeth, positive rake angle, and fast cut with good surface finish.

Skip or Skip Tooth: Wide, flat gullets, a "0" rake angle, equally spaced teeth, and recommended for non-ferrous materials.



Blade Pitch (TPI)

The chart below is a basic starting point for choosing teeth per inch (TPI) for variable tooth pitch blades and standard raker set bi-metal blades/HSS blades. However, for exact specifications of bandsaw blades that are correct for your operation, contact the blade manufacturer.

To select the correct blade pitch:

1. Measure the material thickness. This measurement is the length of cut taken from where the tooth enters the workpiece, sweeps through, and exits the workpiece.
2. Refer to the "Material Width/Diameter" row of the blade selection chart in **Figure 15**, and read across to find the workpiece thickness you need to cut.

3. Refer to the "Material Shapes" row and find the shape of the material to be cut.
4. In the applicable row, read across to the right and find the box where the row and column intersect. Listed in the box is the minimum TPI recommended for the variable tooth pitch blades.
5. The "Cutting Speed Rate Recommendation" section of the chart offers guidelines for various metals, given in feet per minute (FPM). Choose the speed closest to the number shown in the chart.

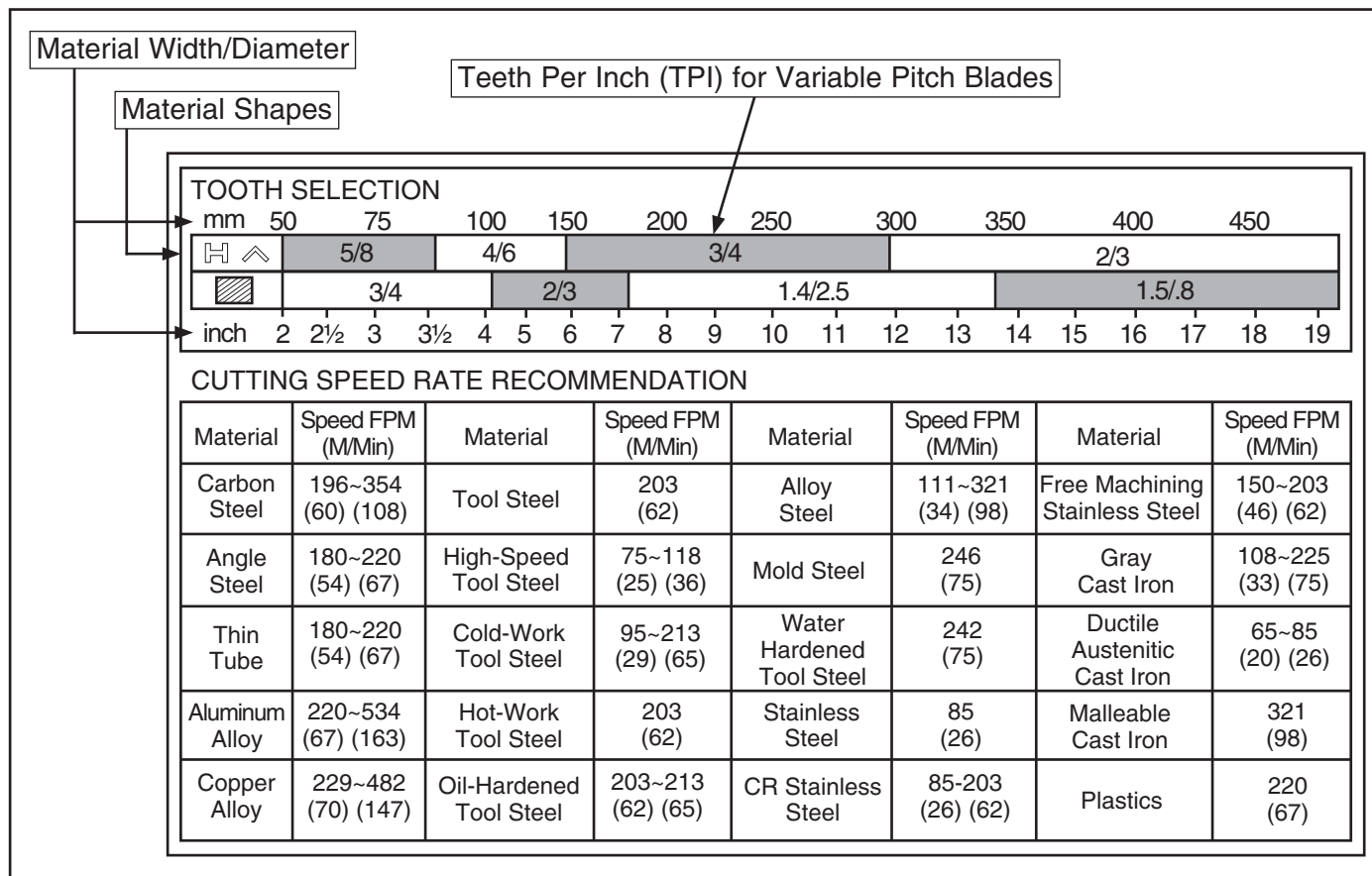


Figure 15. General guidelines for blade selection and speed chart.



Blade Breakage

Many conditions may cause a bandsaw blade to break. Blade breakage is unavoidable, in some cases, since it is the natural result of the peculiar stresses that bandsaw blades must endure. Blade breakage is also due to avoidable circumstances. Avoidable blade breakage is most often the result of poor care or judgement on the part of the operator when mounting or adjusting the blade or support guides.

The most common causes of blade breakage are:

- Faulty alignment or adjustment of the blade guides.
- Forcing or twisting a wide blade around a short radius.
- Feeding the workpiece too fast.
- Dull or damaged teeth.
- Over-tensioned blade.
- Top blade guide assembly set too high above the workpiece. Adjust the top blade guide assembly so that there is approximately 1/4" between the bottom of the assembly and the workpiece.
- Using a blade with a lumpy or improperly finished braze or weld.
- Continuously running the bandsaw when not in use.
- Leaving the blade tensioned when not in use.
- Using the wrong pitch (TPI) for the workpiece thickness. The general rule of thumb is to have at least three teeth in contact with the workpiece at all times during cutting.

Blade Care & Break-In

Blade Care

A bandsaw blade is a delicate piece of steel that is subjected to tremendous strain. A blade will last longer if you give it fair treatment and always use the appropriate feed rate for your operation.

Be sure to select blades with the proper width, set, type, and pitch for each application. Using the wrong blade often produces unnecessary heat and shortens the life of the blade.

A clean blade performs much better than a dirty blade. Dirty or gummed up blades pass through the cutting material with much more resistance than clean blades. This extra resistance also causes unnecessary heat.

Blade Break-In

The sharp teeth tips and edges of a new blade are extremely sharp, and cutting at too fast of a feed rate may fracture the beveled edges of the teeth and cause premature blade wear.

To properly break-in a new blade:

1. Choose the correct speed for the blade and material of the operation.
2. Reduce the feed pressure by half for the first 50–100 in² of material cut.
3. To avoid twisting the blade when cutting, reduce the feed pressure when the total width of the blade is in the cut.
4. Use the **Chip Inspection Chart** on **Page 23** to check the blade efficiency.



Chip Inspection Chart

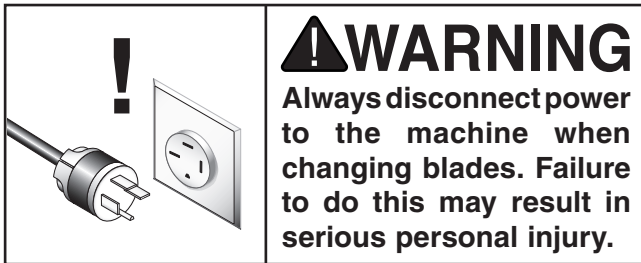
The best method of evaluating the performance of your cutting operation is to inspect the chips that are formed. Refer to the chart below for chip inspection guidelines.

Chip Appearance	Chip Description	Chip Color	Blade Speed	Feed Pressure	Additional Actions
	Thin & Curled	Silver	Good	Good	
	Hard, Thick & Short	Brown or Blue	Decrease	Decrease	Lubricate with Light Oil
	Hard, Strong & Thick	Brown or Blue	Decrease	Decrease	Lubricate with Light Oil
	Hard, Strong & Thick	Silver or Light Brown	Good	Decrease Slightly	Check Blade Pitch
	Hard & Thin	Silver	Increase	Decrease	Check Blade Pitch
	Straight & Thin	Silver	Good	Increase	
	Powdery	Silver	Decrease	Increase	
	Curled Tight & Thin	Silver	Good	Decrease	Check Blade Pitch

Figure 16. Chip inspection chart.



Blade Changes



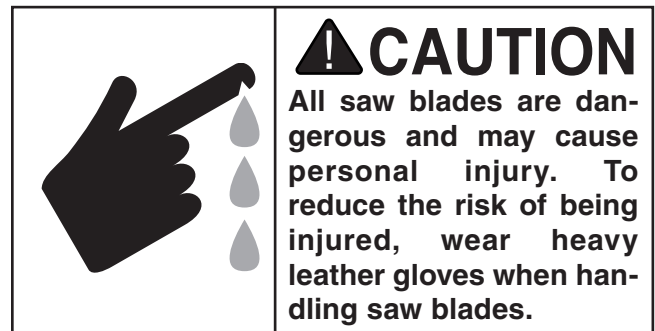
To replace the blade:

1. DISCONNECT BANDSAW FROM POWER!
2. Open the upper and lower wheel doors.
3. Release the blade tension by rotating the tensioning handwheel.
4. Put on heavy leather gloves, then slide the blade off the upper and lower wheels, around the blade post, and through the table slit.
5. Install a new blade in reverse order (see **Figure 17**).



Figure 17. Placing blade on upper wheel.

Note: Make sure the teeth are pointing down toward the table. If the teeth will not point downward in any orientation, the blade is inside out. Remove the blade and twist it right side-out.



6. Rotate the top wheel by hand several times to make sure the blade tracks evenly without wandering across the wheel surface.

Note: If the blade wanders across the wheel, the wheel alignment may need to be adjusted. Refer to **Wheel Alignment** on **Page 38** for detailed instructions.

7. Re-tension the blade (refer to **Blade Tensioning** on **Page 25**).
8. Check the upper and lower blade guides for proper clearance (refer to **Adjusting Blade Guides** on **Page 26**).

Note: Generally if the replacement blade is the same gauge, width, and type, blade guide adjustment is not necessary. Otherwise, you must re-adjust the blade guides.

9. Close and secure the upper and lower wheel doors.



Blade Tensioning

Proper blade tension reduces the risk of blade breakage and improves cutting performance.

To correctly tension the blade:

1. DISCONNECT BANDSAW FROM POWER!
2. Open the upper wheel door, and raise the blade post and upper blade guide assembly to the highest position.
3. Check the side-to-side deflection of the blade midway between the upper blade guide and the table. The proper amount of deflection should be approximately $\frac{3}{8}$ " when moderate pressure is applied (see **Figure 18**).

Note: *The quickest and easiest way to check blade tension is to use the Model H5408 Blade Tensioning Gauge for a recommended setting of 25,000–30,000 PSI (refer to Page 31).*

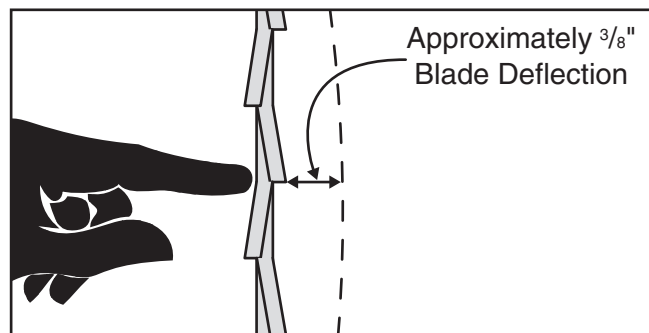


Figure 18. Blade deflection when correctly tensioned.

4. Make small adjustments to the blade tensioning handwheel, then rotate the top wheel by hand several times before checking the blade deflection again. Repeat this step until you are satisfied.
5. Close the upper wheel door and reposition the guide post.

Guide Post

The guide post assembly is used for two purposes: 1) To properly position the blade guard to protect the operator from the exposed blade between the workpiece and the upper wheel housing, and 2) to position the upper blade guides close to the workpiece for blade support.

In order to cut accurately and safely, position the bottom of the upper blade guides approximately $\frac{1}{4}$ " above the workpiece—this positioning provides the greatest blade support and minimizes the amount of blade exposed to the operator during operation.

To properly position the guide post:

1. DISCONNECT BANDSAW FROM POWER!
2. Loosen the guide post lock knob (see **Figure 19**).

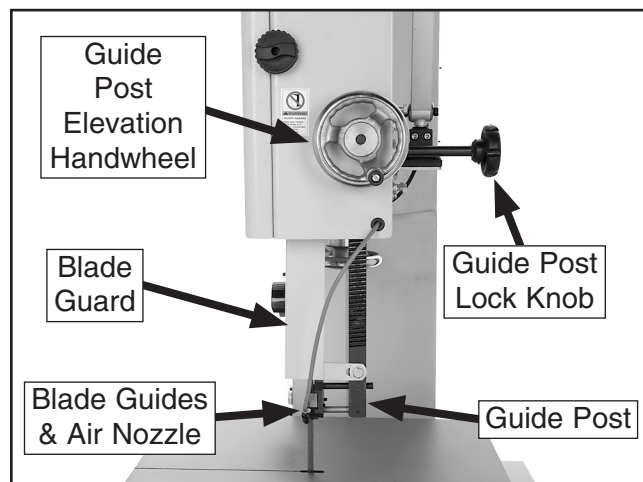


Figure 19. Guide post assembly.

3. Use the guide post elevation handwheel to position the bottom of the upper blade guides approximately $\frac{1}{4}$ " above the workpiece, then re-tighten the lock knob.

NOTICE

To prolong blade life, release the tension on the blade if the machine will be idle for an extended period of time.



Adjusting Blade Guides & Supports

The blade guides and supports provide side-to-side and rear support to keep the blade straight while cutting. These devices have tungsten steel facing to reduce wear on the surfaces. Properly adjusted blade guides and supports are essential to making accurate cuts.

To properly adjust the upper and lower blade guides and supports:

1. DISCONNECT BANDSAW FROM POWER!
2. Make sure the bandsaw blade is properly tensioned (refer to **Page 25**) and the blade post is in the correct position and locked.
3. Use a 6mm hex wrench to loosen the cap screws that secure the blade guide bracket and blade support (see **Figures 20–21**).

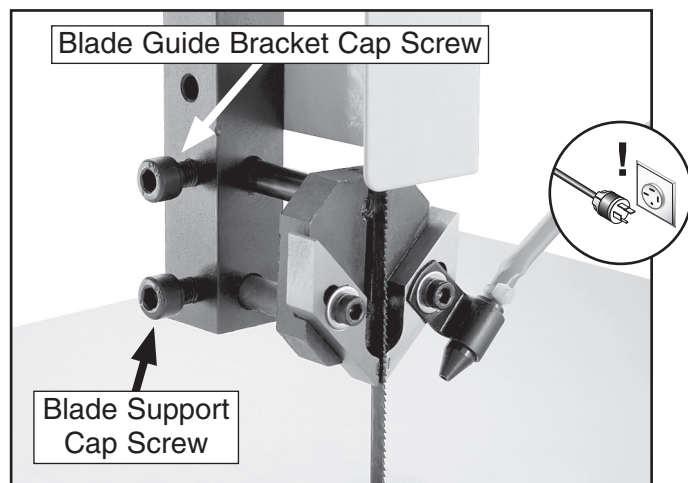



Figure 20. Upper blade guides and bracket.



⚠ WARNING

The bandsaw blade is sharp and can easily cut your hand or fingers. Always disconnect the power and wear heavy leather gloves when making adjustments to or near the blade.

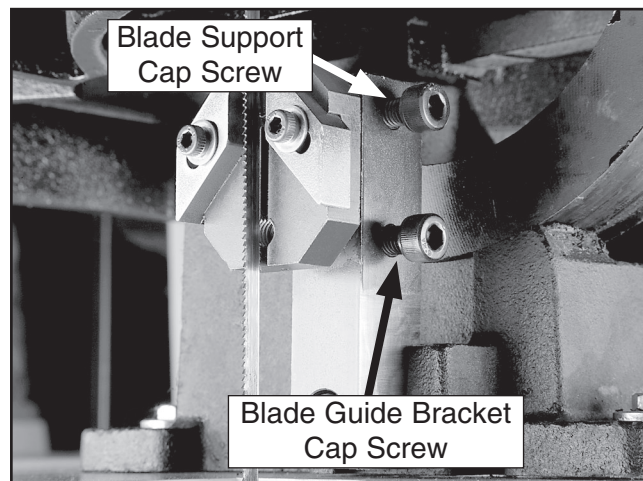


Figure 21. Lower blade guides and bracket.

4. Position the blade guides so that they are approximately $\frac{1}{16}$ " behind the tooth gullets (see **Figure 22**), then re-tighten the blade guide bracket cap screw.

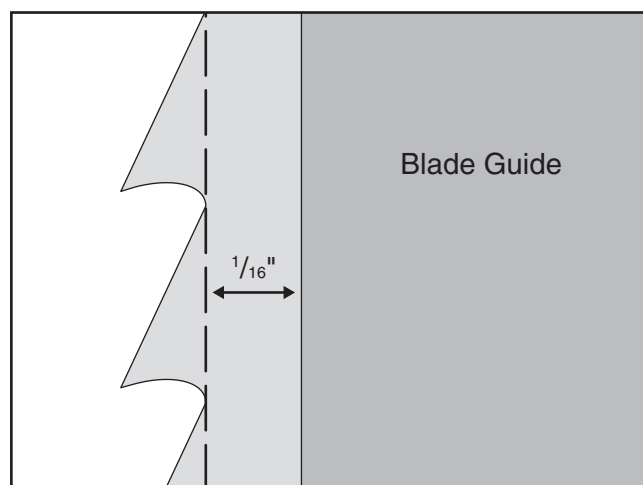


Figure 22. Blade guides positioned approximately $\frac{1}{16}$ " behind tooth gullets.

NOTICE

The blade guides must be adjusted far enough back so that they are behind the tooth gullets when the blade is deflected back against the blade support during operation. Otherwise, the teeth will be damaged as they come in contact with the blade guides.



- Slide the blade support (see **Figure 23**) up to, but not touching, the back of the blade, then re-tighten the blade support cap screw.

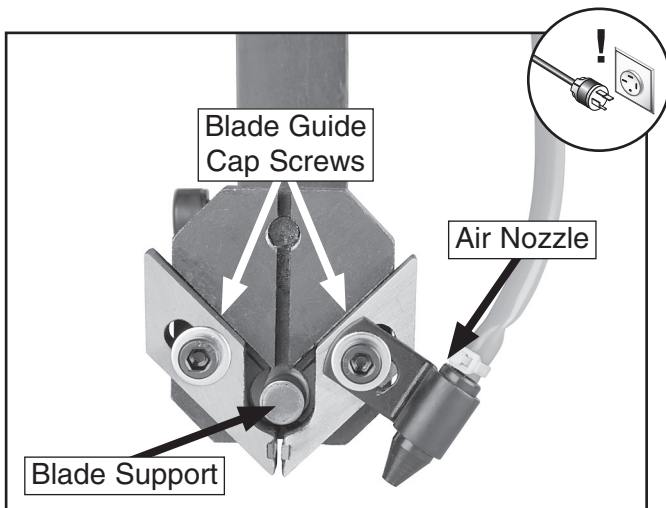


Figure 23. Blade guide assembly (upper assembly shown without blade for clarity).

- Rotate the upper wheel by hand so that the blade weld is between the blade guides.
- Use a 4mm hex wrench to loosen the blade guide cap screws (see **Figure 23**).
- Fold a crisp dollar bill in half and place it over the blade (between the blade guides and the blade), as shown in **Figure 24**.

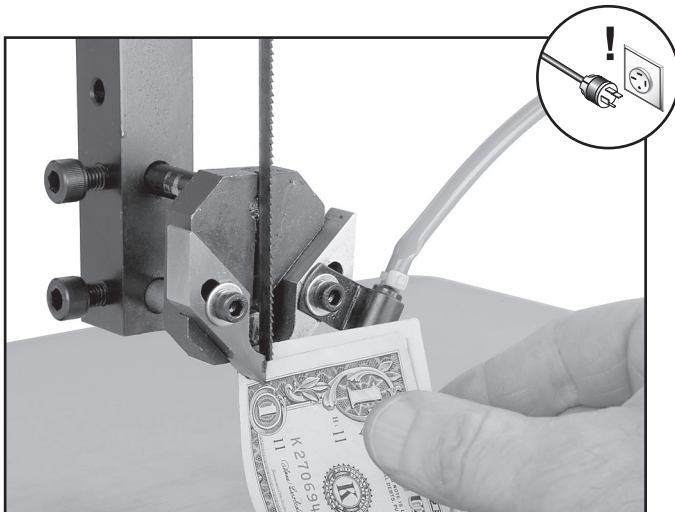


Figure 24. Using a dollar bill to set blade guide spacing.

- Lightly pinch the dollar bill against the blade with the blade guides, re-position the air nozzle if necessary, then re-tighten the blade guide cap screws.

Note: The goal is to position the blade guides as close as possible to the blade without touching it during operation.

Adjusting Table Tilt

To perform beveled cuts, the bandsaw table tilts 15° to the left and 45° to the right.

To adjust the table tilt:

- DISCONNECT BANDSAW FROM POWER!
- Use a 23mm wrench to loosen the hex nut underneath the rear of the table (see **Figure 25**).

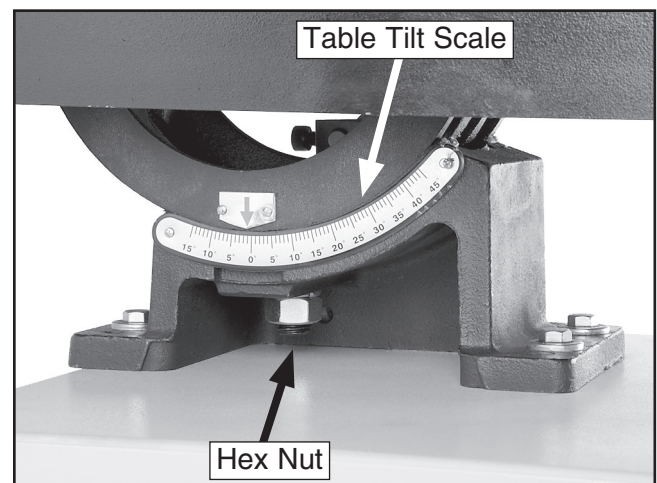


Figure 25. Table tilt scale and hex nut.

- Using the table tilt scale, adjust the angle of the table for your operation, then re-tighten the hex nut.



Blade Welding

Being able to quickly and safely weld a bandsaw blade comes in handy for the following situations:

- To repair a broken blade that is still sharp and useful.
- To fabricate a new blade from a larger section of blade material to fit your bandsaw.
- To re-join a blade that has been purposely cut for making an internal cut.

Your metal cutting bandsaw is equipped with a blade welder that uses electrical resistance to heat and fuse the blade ends together. This process leaves the joint brittle, so it needs to be annealed after welding to give it strength and flexibility.

⚠️ WARNING

The electric current that flows through the blade welder during operation could cause serious personal injury or death. To avoid the risk of electrocution, never touch the blade or any metal part of the machine during blade welding or annealing.

To weld the ends of bandsaw together:

1. Turn the bandsaw motor **OFF**.
2. Place the blade evenly against the back of the blade shear and firmly pull the handle down to square off the blade end (see **Figure 26**).



Figure 26. Using the blade shear to cut the blade.

3. To make a proper blade weld, the ends of the blade must be evenly butted together during the welding process. If necessary, use the grinder to square up the ends or remove any teeth that are in the welding zone (see **Figures 27–28**).



Figure 27. Using the grinder to square up the blade end.

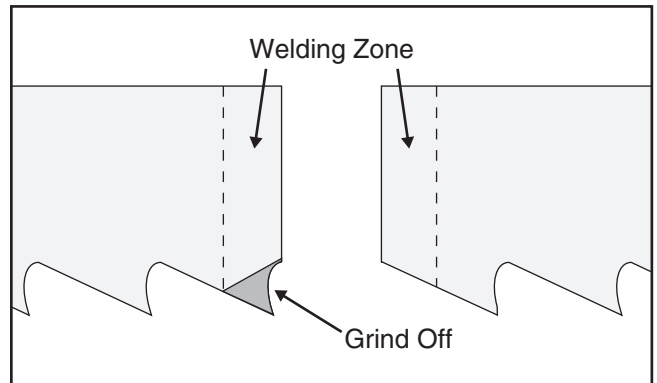


Figure 28. Blade ends and welding zone.



- Loosen the welding clamps by pulling the lock levers down.
- Position the back of one blade end evenly against the back of the welding clamp so that the end is midway between the two clamps, then rotate that lock lever all the way up to hold the blade end in place (see **Figure 29**).

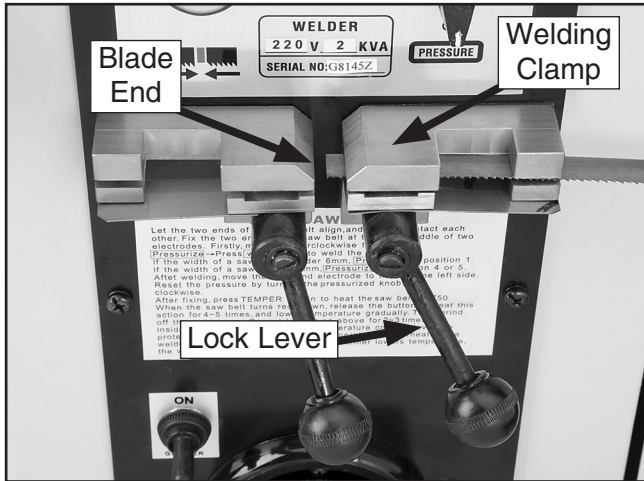


Figure 29. Blade end properly position in welding clamp and locked in place.

- Set the clamping pressure dial to "0" (see **Figure 30**).

Note: As the blade material melts to form the weld, pressure is applied to the joint by the welding clamps. The correct amount of pressure is set with the clamping pressure dial in a later step.

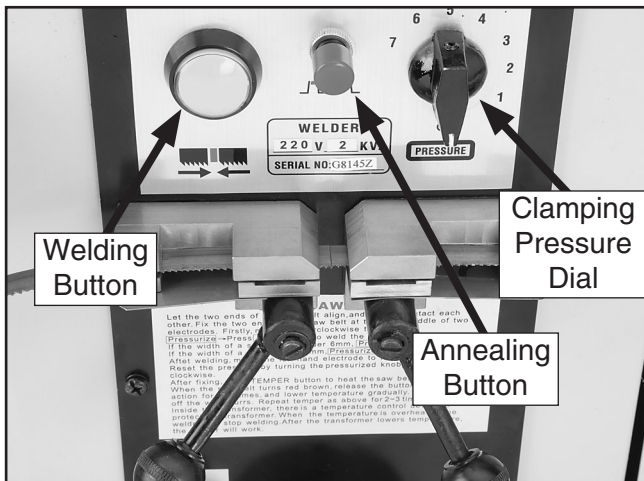


Figure 30. Blade ends in correct position for welding.

- Place the other blade end in the opposite welding clamp and position it so that it evenly butts up against the opposing blade end, then lock it in place by rotating that lock lever all the way up, as shown in **Figure 30**.

Note: For a good blade weld, it is critical that the blade ends evenly butt up against each other.

- Use the chart in **Figure 31** and turn the clamping pressure dial to the correct setting for the blade.

Blade Width	Pressure Setting
Up to 1/4"	1
1/4" to 3/8"	2-3
Above 3/8"	4+

Figure 31. Blade clamping pressure chart.

⚠ WARNING

Burning sparks from the blade welding operation may be thrown in all directions and could cause serious personal injury or fire. When using the blade welder, always protect yourself from the flying sparks and have fire extinguishing equipment readily available. **DO NOT** weld near flammables.

- Press and release—DO NOT hold—the welding button.

Note: There is a limit switch that senses the electrical resistance between the blade ends. If there is an adequate amount of welded material, the limit switch will not allow the welding button to activate the operation again.



10. After the welding operation is complete, rotate the lock levers down to release the welding clamps, then rotate the clamping pressure dial to "0".
11. Inspect the weld. The welded joint should be even across the width of the blade with no gaps (see **Figure 32**).

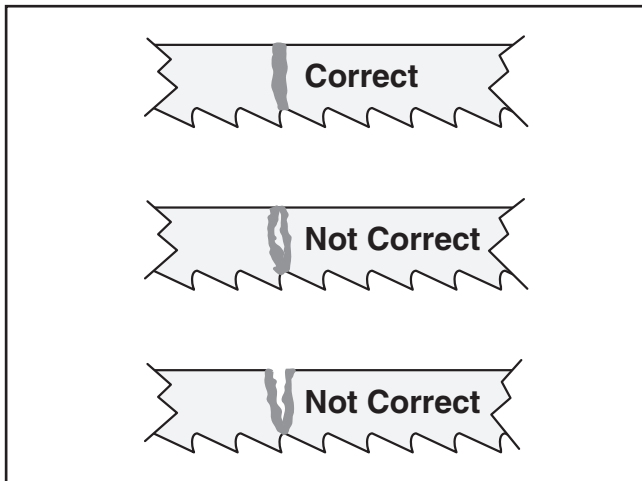


Figure 32. Blade welded joint examples.

—If the weld is satisfactory, continue to **Step 12**.

—If the weld is NOT satisfactory, begin again at **Step 2**.

12. Set the clamping pressure dial to 4 or greater to bring the welding clamps close together.
13. Place the blade in the welding clamps with the weld centered between the clamps and re-tighten the lock levers.

Note: *The welding operation has left the blade joint brittle. Annealing will allow the material to cool in gradual manner, giving the weld strength and flexibility.*

14. Rapidly press and release—DO NOT hold—the annealing button two or three times until the weld zone turns dull red.
15. Repeat **Step 14** three to four more times, allowing the weld to cool for about 30 seconds between each repetition.

16. Allow the blade to fully cool, then re-inspect the weld.
17. Grind away the weld flash on either side of the joint and the back of the blade until the weld is flat and the blade will run smoothly on the wheels.

Note: *Make sure not to grind the teeth or blade body, or overheat the blade during grinding—this will weaken the blade.*

18. Re-clamp the blade in the welding clamps with the joint centered, then repeat **Step 14** twice more.
19. Test the strength and flexibility of the weld by bending the blade in an arc similar to that of the bandsaw wheels. The blade should bend smoothly without any angles (see **Figure 33**).

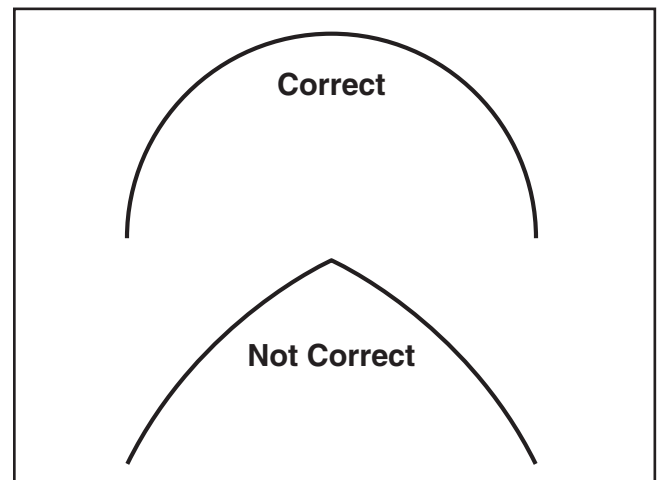


Figure 33. Correct blade weld bend for strength and flexibility.

NOTICE

For good metal-to-metal contact between the welding clamps and the blade, make sure the blade material and the clamps are free from any debris or flash before each use.



SECTION 5: ACCESSORIES

T20501—Face Shield, 4" Crown, Clear
 T20502—Face Shield, 7" Crown, Clear
 T20448—Economy Clear Safety Glasses
 T20452—"Kirova" Anti-Reflective Glasses
 T20456—"Dakura" Clear Safety Glasses
 H0736—Shop Fox® Safety Glasses
 These glasses meet ANSI Z87.1-2003 specifications. Buy extras for visitors or employees. You can't be too careful with shop safety!

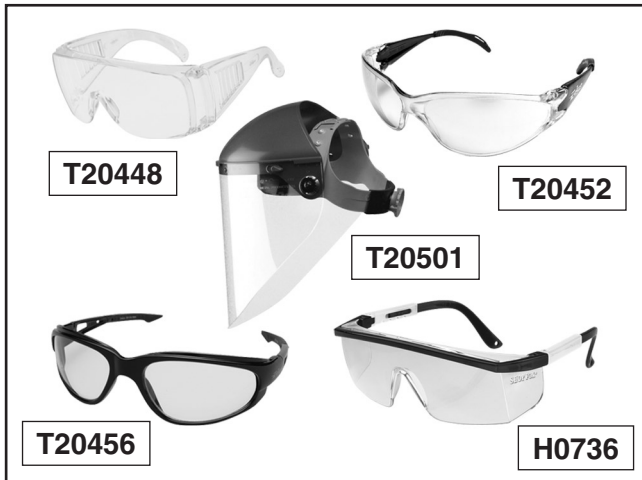


Figure 34. Our most popular eye protection.

T20514—Small Half-Mask Respirator
 T20515—Medium Half-Mask Respirator
 T20516—Large Half-Mask Respirator
 T20511—Pre-Filter P100
 T20539—Cartridge Filter 2PK P100
 T20541—Cartridge Filter 2PK P100 & O Vapor
 Wood and other types of dust can cause severe respiratory damage. If you work around dust everyday, a half-mask respirator can greatly reduce your risk. Compatible with safety glasses!



Figure 35. Half-mask respirator with disposable cartridge filters.

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G0668 20" Vertical Metal-Cutting Bandsaw



Grizzly Metal-Cutting Bandsaw Blades
 Variable Pitch, 1" Width, 0.035" Gauge
 T20523—3-4 VP TPI
 T20524—4-6 VP TPI
 T20525—5-8 VP TPI
 T20526—6-10 VP TPI
 T20527—8-12 VP TPI
 T20528—10-14 VP TPI

H5408—Blade Tensioning Gauge
 The Blade Tensioning Gauge ensures long blade life, reduced blade breakage, and straight cutting by indicating correct tension. A precision dial indicator provides you with a direct readout in PSI.



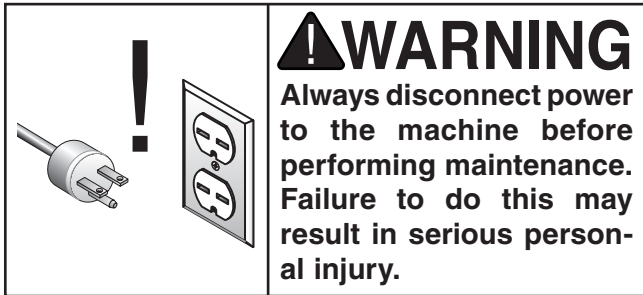
Figure 36. H5408 Blade Tensioning Gauge.

G5562—SLIPIT® 1 Qt. Gel
 G5563—SLIPIT® 12 oz Spray
 G2871—Boeshield® T-9 12 oz Spray
 H3788—G96® Gun Treatment 12 oz Spray



Figure 37. Recommended products for protecting unpainted cast iron/steel part on machinery.

SECTION 6: MAINTENANCE



Schedule

For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Daily:

- Check/correct damaged or dull saw blade.
- Check/correct worn or damaged wires.
- Clean/protect table.
- Clean metal chips from upper and lower wheel areas and the lower wheel brush, and empty bottom chip pan.
- Correct any other unsafe condition.

Monthly:

- Check for V-belt tension, damage, or wear.
- Lubricate tension leadscrews and guide post rack.
- Remove the blade and clean the wheels.
- Re-adjust the lower wheel brush.

Cleaning

Use a brush and a shop vacuum to remove chips and other debris from the machine. Keep the table rust-free with regular applications of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 31**).

Once a month, remove the blade and thoroughly clean all metal chips and built-up oil or sludge from the wheel surfaces. Redress the rubber tires if necessary (**Page 33**).

When cleaning the wheel areas, empty and clean the chip pan (see **Figure 38**).



Figure 38. Lower wheel chip pan.



Redressing Rubber Tires

As the bandsaw ages, the rubber tires on the wheel may need to be redressed if they become hardened or glazed over. Redressing the rubber tires improves blade tracking and reduces vibration/blade lead.

If the rubber tires become too worn, then blade tracking will become extremely difficult. At that point, redressing will no longer be effective, and the rubber tires must be replaced.

To redress the rubber tires:

1. DISCONNECT BANDSAW FROM POWER!
2. Put on heavy gloves and remove the blade.
3. Use a brush and shop vacuum to clean any chips and built-up oil or sludge from the rubber tires.
4. Hold a piece of 100-grit sandpaper against the rubber tire and rotate the wheel by hand. Only redress the rubber enough to expose a fresh rubber surface.

Lubrication

The bearings on your bandsaw are factory lubricated and sealed. Merely leave them alone unless they need to be replaced.

Before lubricating the tension leadscrew or guide post rack, wipe as much of the old grease off as possible. The old grease will be contaminated with metal dust and increase the wear of the metal surfaces. Use mineral spirits or the degreaser shown in **Figure 4** on **Page 12** to clean any remaining grease off, making sure to thoroughly wipe off the degreaser or mineral spirits that may contaminate the new grease.

When the leadscrew and rack are thoroughly clean and dry, brush a light coat of automotive-grade multi-purpose grease on the tension leadscrew and guide post rack to maintain smooth operation (see **Figure 39**).

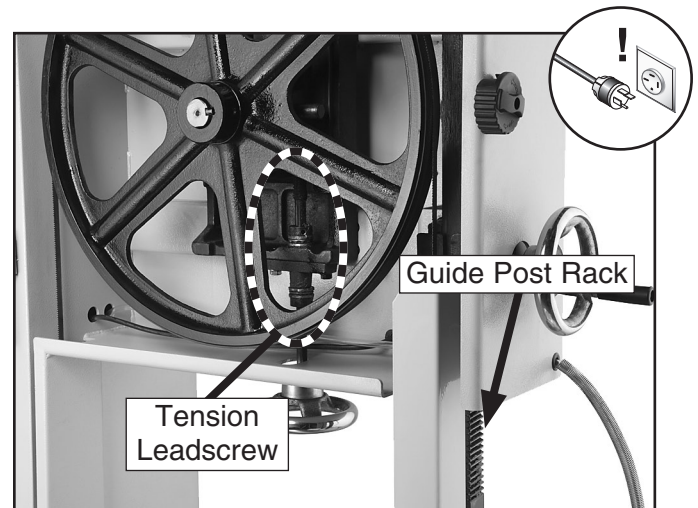


Figure 39. Tension leadscrew and guide post rack.

If the table becomes difficult to tilt, position it so that you use the same process described above to clean the metal surfaces of the trunnion and table. Then brush a thin coat of automotive-grade multi-purpose grease on the trunnion surfaces (see **Figure 40**). Tilt the table back and forth to distribute the grease.

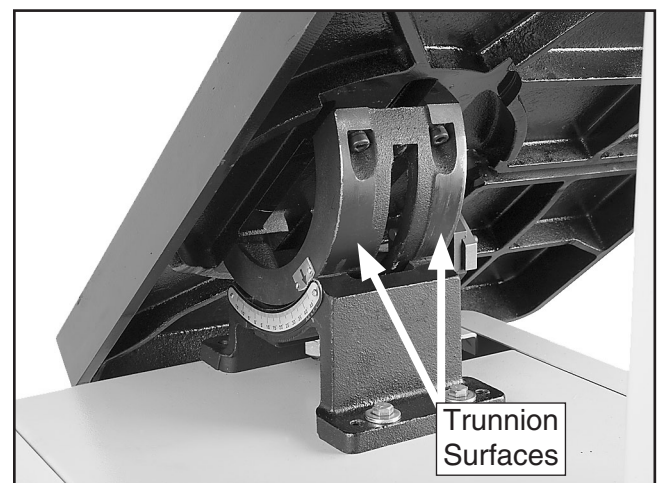


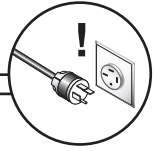
Figure 40. Table tilted to expose trunnion surfaces.



SECTION 7: SERVICE

Review the troubleshooting and procedures in this section to fix or adjust your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	<ol style="list-style-type: none"> 1. Power switch key is removed or not in ON position. 2. Emergency stop push-button is engaged/faulty. 3. Plug/receptacle is at fault or wired incorrectly. 4. Motor connection wired incorrectly. 5. Wall fuse/circuit breaker is blown/tripped. 6. Power supply switched OFF or is at fault. 7. Wiring is open/has high resistance. 8. Inverter is at fault. 9. Motor is at fault. 	<ol style="list-style-type: none"> 1. Install power switch key and turn it to the ON position. 2. Rotate clockwise until it pops out; replace it if faulty. 3. Test for good contacts; correct the wiring. 4. Correct motor wiring connections (Page 45). 5. Ensure circuit size is suitable for this machine; replace weak breaker. 6. Ensure power supply is switched on; ensure power supply has the correct voltage. 7. Check for broken wires or disconnected/corroded connections, and repair/replace as necessary. 8. Replace inverter. 9. Test/repair/replace.
Machine stalls or is overloaded.	<ol style="list-style-type: none"> 1. Feeding workpiece too fast. 2. Workpiece alignment is poor. 3. Wrong workpiece material or blade. 4. Blade is slipping on wheels. 5. Motor connection is wired incorrectly. 6. V-belt(s) slipping. 7. Plug/receptacle is at fault. 8. Pulley/sprocket slipping on shaft. 9. Motor bearings are at fault. 10. Machine is undersized for the task. 11. Motor has overheated. 12. Motor is at fault. 	<ol style="list-style-type: none"> 1. Reduce feed rate; increase blade speed. 2. Eliminate workpiece binding; use jig, fence, guide, clamps, roller table, or push blocks as required for workpiece alignment control. 3. Use metal with correct properties for your type of machining; match blade with workpiece and operation. 4. Adjust blade tracking and tension (Page 25), redress rubber wheel tires if necessary (Page 33). 5. Correct motor wiring connections (Page 45). 6. Replace bad V-belt(s) as a matched set, align pulleys, and re-tension (Pages 36 & 37). 7. Test for good contacts; correct the wiring. 8. Replace loose pulley/shaft. 9. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement. 10. Use sharp blade with lower TPI; reduce the feed rate; use a small amount of oil-based coolant if necessary. 11. Clean off motor, let cool, and reduce workload. 12. Test/repair/replace.



Motor & Electrical (continued)

Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> 1. V-belt(s) worn or loose. 2. Pulley is loose. 3. Motor mount loose/broken. 4. Machine is incorrectly mounted or sits unevenly. 5. Workpiece is loose. 6. Motor fan is rubbing on fan cover. 7. Motor bearings are at fault. 8. Blade is at fault. 9. Blade wheels out of alignment. 	<ol style="list-style-type: none"> 1. Inspect/replace V-belts with a new matched set (Pages 36 & 37). 2. Realign/replace shaft, pulley, set screw, and key as required. 3. Tighten/replace. 4. Tighten/replace anchor studs in floor; relocate/shim machine. 5. Use the correct holding fixture and reclamp workpiece. 6. Replace dented fan cover; replace loose/damaged fan. 7. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement. 8. Re-tension/replace blade (Pages 24 & 25). 9. Re-align blade wheels (Page 38).

Cutting Operations

Symptom	Possible Cause	Possible Solution
Machine slows when operating.	<ol style="list-style-type: none"> 1. Feeding workpiece too fast. 2. Blade is dull. 	<ol style="list-style-type: none"> 1. Reduce feed rate/increase blade speed. 2. Replace blade (Page 24).
Ticking sound when the saw is running.	<ol style="list-style-type: none"> 1. Blade weld contacting blade guide/support (a light ticking is normal). 2. Blade weld may be failing. 	<ol style="list-style-type: none"> 1. Inspect/re-grind blade weld (Page 28); re-adjust blade guides/support (Page 26). 2. Inspect weld and re-weld blade if necessary (Page 28), or replace blade (Page 24).
Blade contacting table.	<ol style="list-style-type: none"> 1. Table improperly mounted or aligned. 	<ol style="list-style-type: none"> 1. Properly align table (Page 40).
Vibration when cutting.	<ol style="list-style-type: none"> 1. Workpiece is loose. 2. Loose or damaged blade. 3. Metal chip buildup on wheels. 	<ol style="list-style-type: none"> 1. Use the correct holding fixture and reclamp workpiece. 2. Re-tension/replace blade (Pages 24 & 25). 3. Clean metal chips from wheels.
Rough or poor quality cuts.	<ol style="list-style-type: none"> 1. Feeding workpiece too fast. 2. Incorrect blade for operation; worn or damaged blade. 3. Blade guides/support adjusted incorrectly. 	<ol style="list-style-type: none"> 1. Reduce feed rate/increase blade speed. 2. Use the correct blade for the operation (Page 19); replace worn or damaged blade (Page 24). 3. Correctly adjust blade guides/support (Page 26); set the blade guides approximately 1/8" above workpiece.
Blade wanders or doesn't cut straight.	<ol style="list-style-type: none"> 1. Blade lead. 2. Metal chip buildup on wheels. 	<ol style="list-style-type: none"> 1. Re-tension/replace blade (Pages 24 & 25). 2. Clean metal chips from wheels.
Cuts are not square (vertically).	<ol style="list-style-type: none"> 1. Table tilt is not adjusted to "0". 2. Table is not square to the blade. 	<ol style="list-style-type: none"> 1. Adjust table to "0" tilt. 2. Adjust table square with blade (Page 40).
Wheel is noisy.	<ol style="list-style-type: none"> 1. Wheel bearing is worn out. 2. V-belt is too tight (lower wheel). 	<ol style="list-style-type: none"> 1. Replace wheel bearing. 2. Check/re-tension the V-belt (Page 36).
Blade does not track consistently, correctly, or at all.	<ol style="list-style-type: none"> 1. Wheels are not coplanar or aligned with each other. 2. Rubber tires on wheels are worn out. 	<ol style="list-style-type: none"> 1. Adjust wheels to be coplanar/aligned with one another (Page 38). 2. Redress the rubber tires on the wheels (Page 33).



Lower Wheel Pulley Alignment

Tools Needed:	Qty
Hex Wrench 6mm.....	1
Wrench 19mm.....	1

The correct alignment of the motor and lower wheel pulleys helps to ensure correct and even tension of the V-belts, proper power transmission, and reduced V-belt heat and wear during operation.

Remove the rear motor access panel, and use a straightedge across both pulleys, as shown in **Figure 41**, to check the pulley alignment.

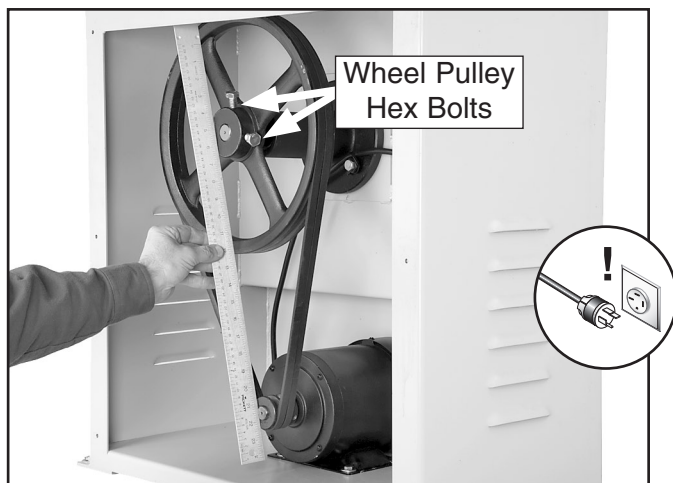


Figure 41. Checking pulley alignment.

If necessary, loosen the fasteners securing the wheel pulley to the shaft, align the wheel pulley with the motor pulley, then re-tighten the fasteners for both pulleys.

Tensioning V-Belts

Tools Needed:	Qty
Wrench 12mm.....	1

To ensure optimum power transfer from the motor to the blade without slipping, the V-belts must be in good condition and operate under proper tension. Check V-belt tension at least monthly—more often if the bandsaw is used daily. V-belts stretch with use and must be periodically re-tensioned.

To check/tension/replace the V-belts:

1. DISCONNECT BANDSAW FROM POWER!
2. Remove the rear motor access panel.
3. Make sure the motor and lower wheel pulleys are correctly aligned.
4. Push the center of each V-belt as illustrated in **Figure 42**, using moderate force. When tensioned correctly, the deflection should be about 3/4".

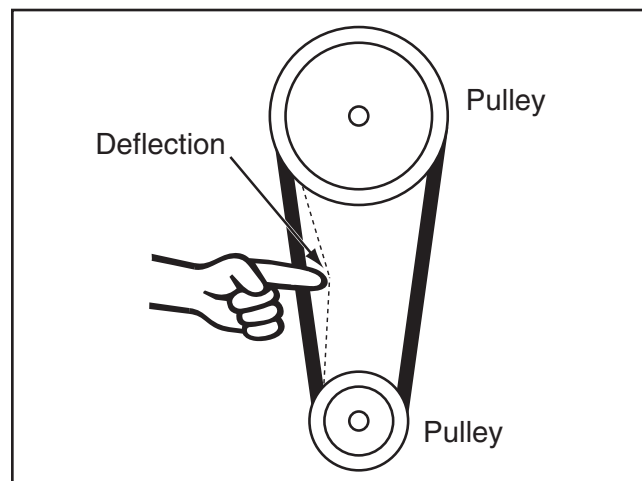


Figure 42. Checking for correct V-belt tension.

—If the deflection is correct and the V-belts are in good condition, no further action is required. Replace the rear motor access panel.

—If the deflection is more than or less than 3/4" or the V-belts need to be replaced, then continue with the next steps.



- Loosen the four motor mounting hex bolts (see **Figure 43**).

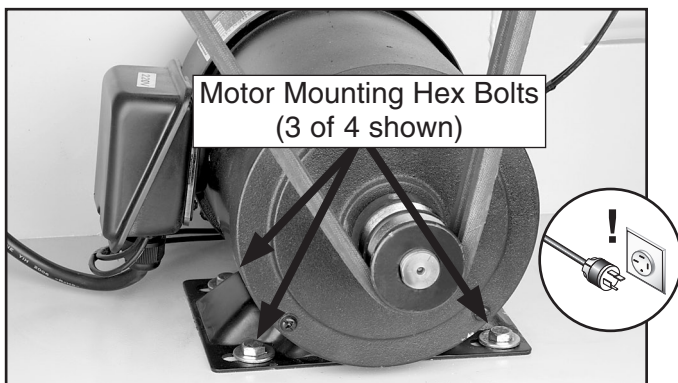


Figure 43. Motor mounting hex bolts.

- Position the motor to adjust the V-belt tension until they have the correct deflection, then re-tighten the hex bolts.

Replacing V-Belts

Tools Needed:	Qty
Wrench 12mm.....	1

Replace the V-belts as a matched set if they are cracked, frayed, or excessively worn.

To replace the motor V-belts:

- DISCONNECT BANDSAW FROM POWER!
- Loosen the four motor mounting hex bolts (see **Figure 43**).
- Move the motor toward the lower wheel to relieve the tension, then roll the V-belts off the pulleys.
- Install a new matched set of V-belts onto the pulleys, then correctly tension them, as described on **Page 36**.
- Secure the motor access panel to the machine before re-connecting it to power.

Adjusting Wheel Brush

Tools Needed:	Qty
Wrench 10mm.....	1

The lower wheel compartment contains the wheel brush shown in **Figure 44**. This brush is designed to sweep chips off the wheel tire as the bandsaw is operating. In order to work properly, the brush must make firm contact with the wheel.

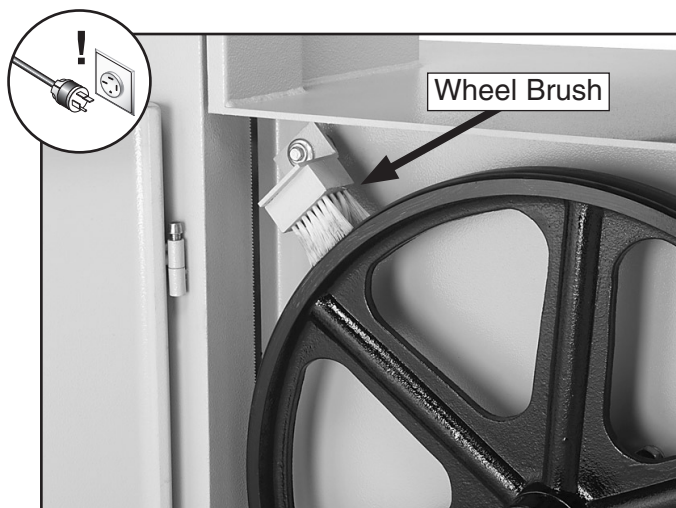


Figure 44. The wheel brush.

To adjust the wheel brush:

- DISCONNECT BANDSAW FROM POWER!
- Open the lower wheel cover.
- Loosen the hex bolt that secures the wheel brush.
- Adjust the wheel brush so that it makes firm contact with the wheel but the bristles are not overly bent.
- Re-tighten the hex bolt to secure the wheel brush in place, and close the lower wheel door.



Wheel Alignment

Materials Needed:	Qty
67 ¹ / ₄ " Long 2x4	1

Tools Needed:	Qty
Wrench 12mm	1
Wrench 17mm	1
Wrench 21mm	1
Coplanarity Gauge (see Figure 45)	1

Wheel alignment is one of the most critical factors for optimal performance from your bandsaw.

Heat, vibration, wandering, blade wear, tire wear, and overall bandsaw wear are considerably decreased when the wheels are properly aligned or "coplanar".

To check if your wheels are parallel and coplanar:

1. Make the "Coplanarity Gauge" shown in **Figure 45**.

Note: For best results, straighten the 2x4 with a jointer before cutting.

2. DISCONNECT BANDSAW FROM POWER!
3. Remove the table assembly, then open both wheel covers.
4. Move the upper and lower blade guides and rear support away from the blade, then correctly tension the blade for normal operations.
5. Place your coplanarity gauge up against both wheels in the positions shown in **Figure 46**, making sure that the gauge fully extends across the wheels.

—If the wheels are parallel and coplanar (in the same plane), the gauge will evenly touch the top and bottom of both wheels and no further adjustments are necessary.

—If the wheels are NOT parallel or coplanar, continue with the following steps to bring both wheels into correct alignment with one another.

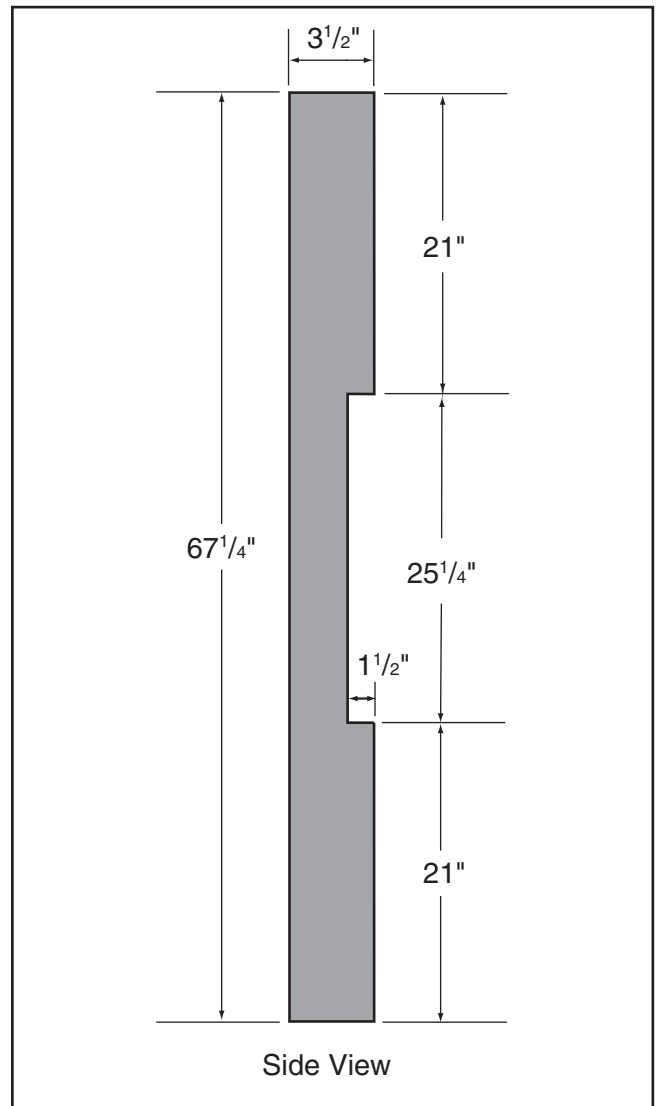


Figure 45. Dimensions of coplanarity gauge.

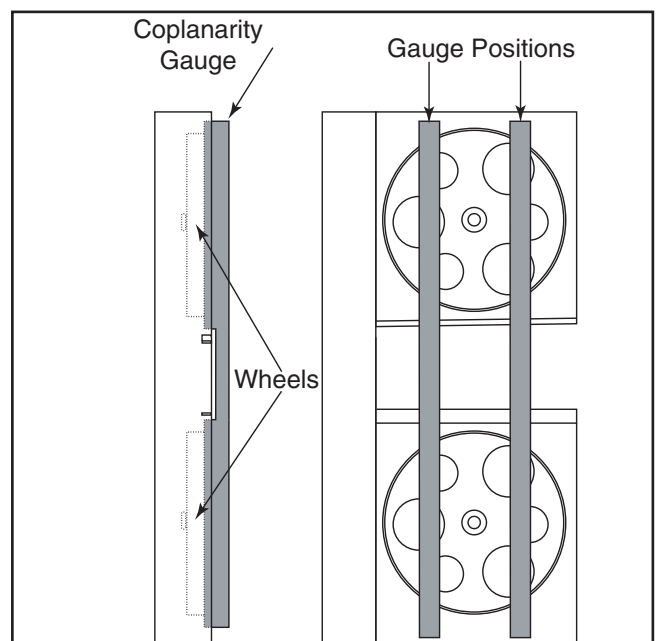


Figure 46. Coplanarity gauge positions.



Although both wheels can be adjusted to accomplish correct wheel alignment, we recommend that you start with the upper wheel, and, if necessary, continue the adjustments with the lower wheel.

When both wheels are correctly aligned with one another, re-check V-belt tension (**Page 36**), re-install the table, re-check table alignment (**Page 40**), and re-adjust the blade guides and supports.

The upper wheel adjusting fasteners consist of four locking hex bolts and four adjusting hex bolts with jam nuts (see **Figure 47**).

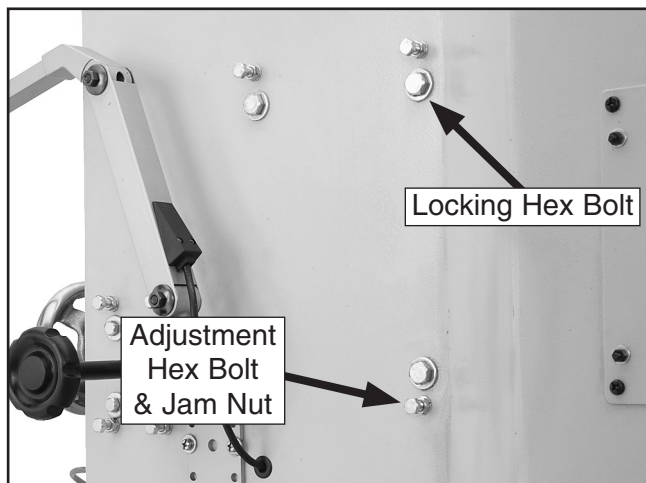


Figure 47. Upper wheel adjusting fasteners.

To adjust the upper wheel:

1. Loosen the upper wheel locking hex bolts, then loosen the jam nuts (see **Figure 47**).
2. Use the adjustment hex bolts to bring the upper wheel coplanar with the lower wheel.

Note: Threading an adjustment hex bolt in will force that part of the wheel forward. Conversely, threading an adjustment hex bolt out will pull that wheel section to the rear of the machine when the locking hex bolt is re-tightened.

3. Re-tighten the locking hex bolts and jam nuts to secure the settings of the adjustment hex bolts.
4. Re-check the wheels for alignment and repeat the steps above if necessary.

The lower wheel adjustment assemblies have a locking hex bolt threaded into an adjustment sleeve (see **Figure 48**).

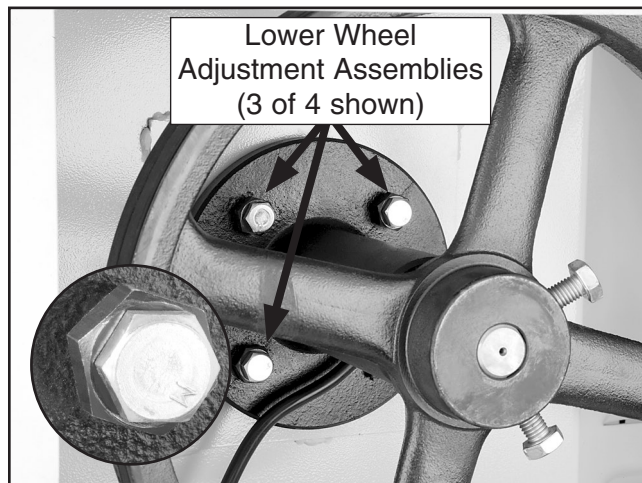


Figure 48. Lower wheel adjustment assemblies.

To adjust the lower wheel:

1. Loosen the locking hex bolts of the lower wheel.
2. Loosen or tighten the adjustment sleeves as necessary to bring the lower wheel coplanar with the upper wheel.

Example 1: If the top of the lower wheel leans too far forward (see fourth example in **Figure 49**), thread the top two adjustment sleeves out.

Example 2: Alternately, if the lower wheel is parallel to the upper wheel but behind the plane of the upper wheel (see second example in **Figure 49**), then thread all four adjustment sleeves in.

3. Re-tighten the locking hex bolts to secure the settings of the adjustment sleeves.
4. Re-check the wheels for alignment and repeat the steps above if necessary.



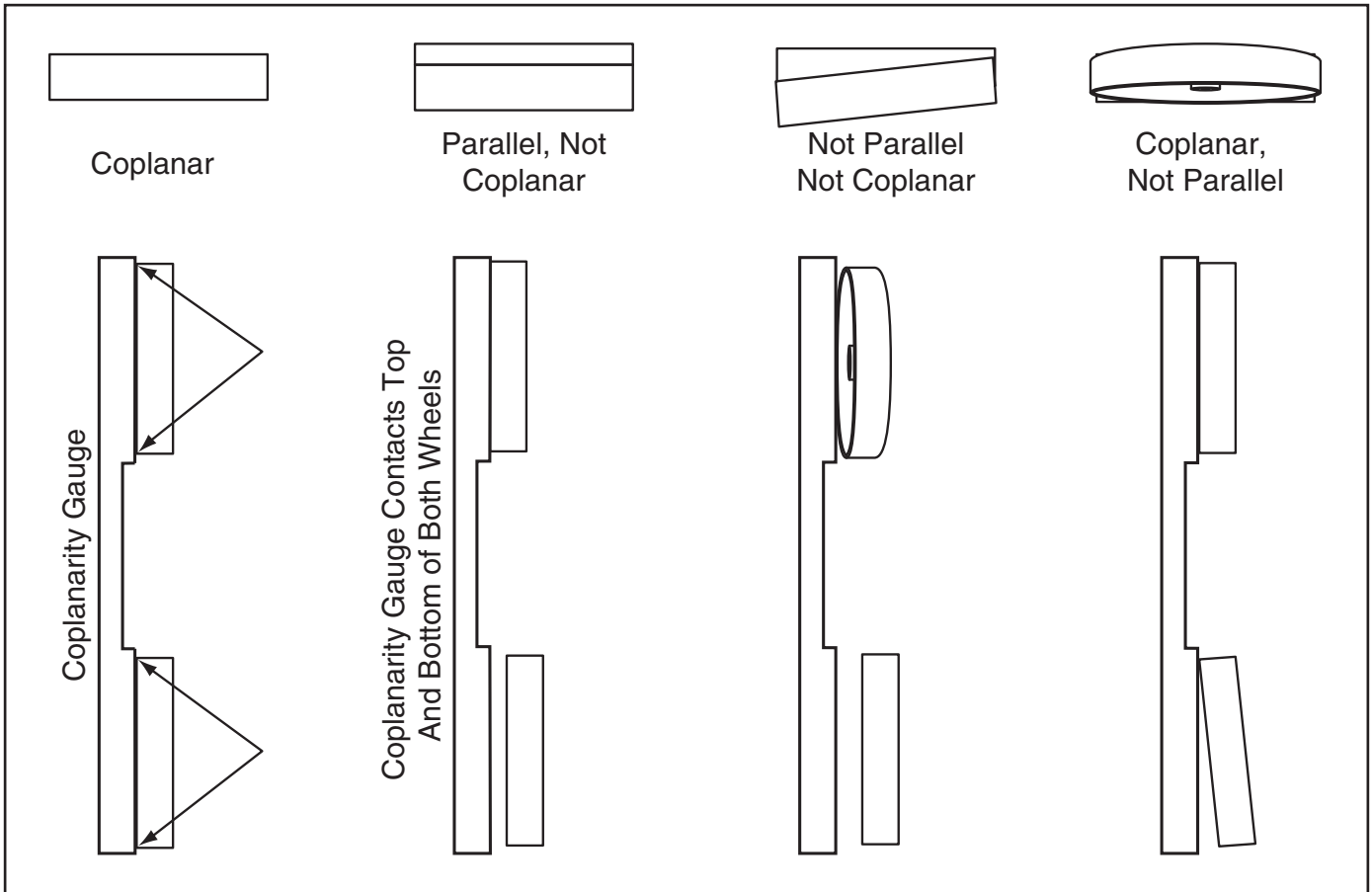


Figure 49. Examples of wheel orientation to one another.

Aligning Table to Blade

To ensure the angle accuracy of the cut, the table must be 90° to the blade from front-to-back and side-to-side. If the table is not square to the blade, it needs to be adjusted.

Tools Needed:	Qty
Hex Wrench 5mm.....	1
Wrench 12mm.....	1

To adjust the table square to the blade:

1. DISCONNECT BANDSAW FROM POWER!
2. Make sure the wheels are correctly aligned (Page 38) and the blade is properly tensioned (Page 25).
3. Set the angle of the table to "0".

4. Use a square to check table alignment with the side and the back of the blade, as shown in Figure 50.

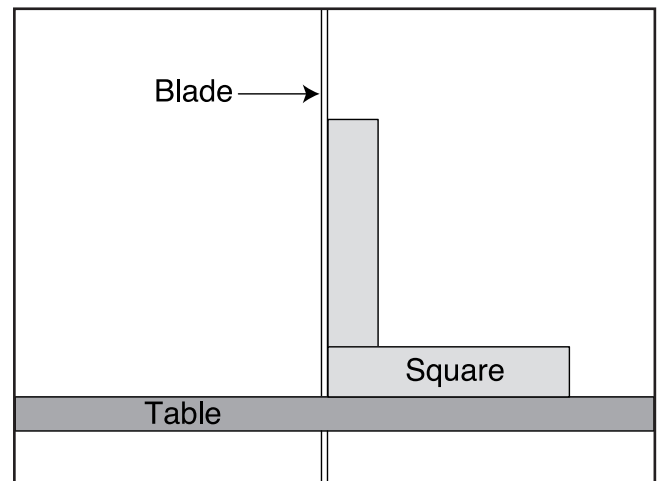


Figure 50. Checking table alignment with the blade.



5. Loosen the table mounting hex bolts (see **Figure 51**).

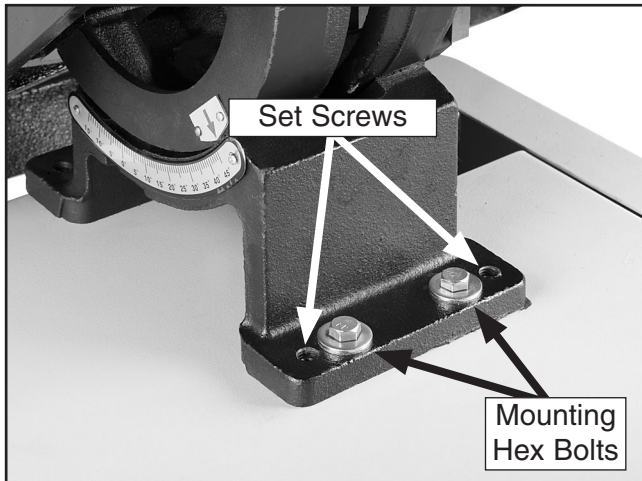


Figure 51. Table mounting hex bolts and adjusting set screws.

6. Adjust the set screws so that the table is square to the blade front-to-back and side-to-side.

Note: *Make small adjustments to the set screws, then recheck the alignment of the table with the blade.*

7. When the table is 90° to the blade from front-to-back and side-to-side, re-tighten the mounting hex bolts to secure the table alignment.

Blade Guides

The inserts in the face of the blade guides and the blade support are made of tungsten steel.

With use, the front of the blade guide inserts will wear and it may become difficult to properly adjust the guides to the blade (refer to **Adjusting Blade Guides & Support** on **Page 26**). If this is the case, swap and turn over the blade guides so that the inserts are reversed relative to the blade (see **Figure 52**).

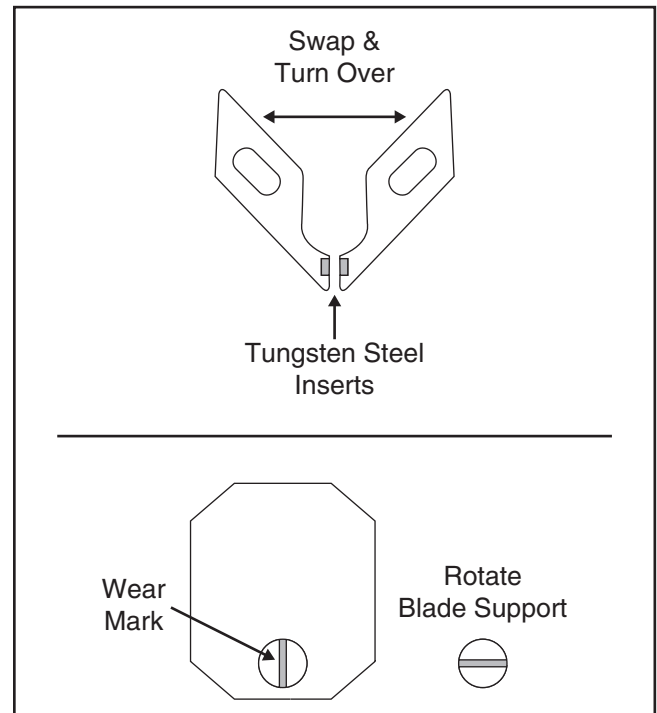


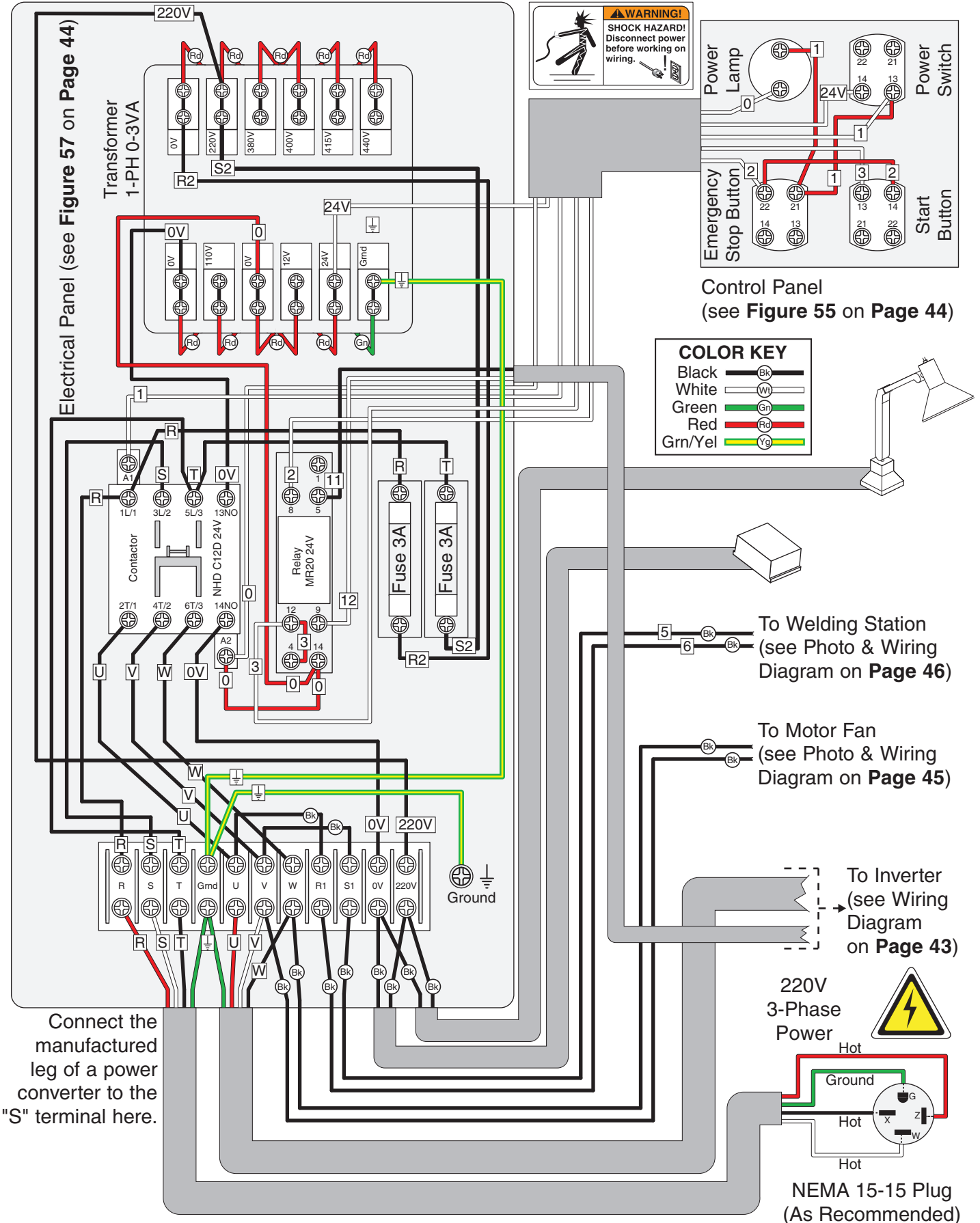
Figure 52. Blade guide and support orientation.

As the blade is deflected back into the blade support during operation, a groove will eventually wear into the blade support. As this groove becomes deeper, it can affect the accuracy of the cut. When this happens, loosen the blade support cap screw and rotate the blade support, as shown in **Figure 52**.

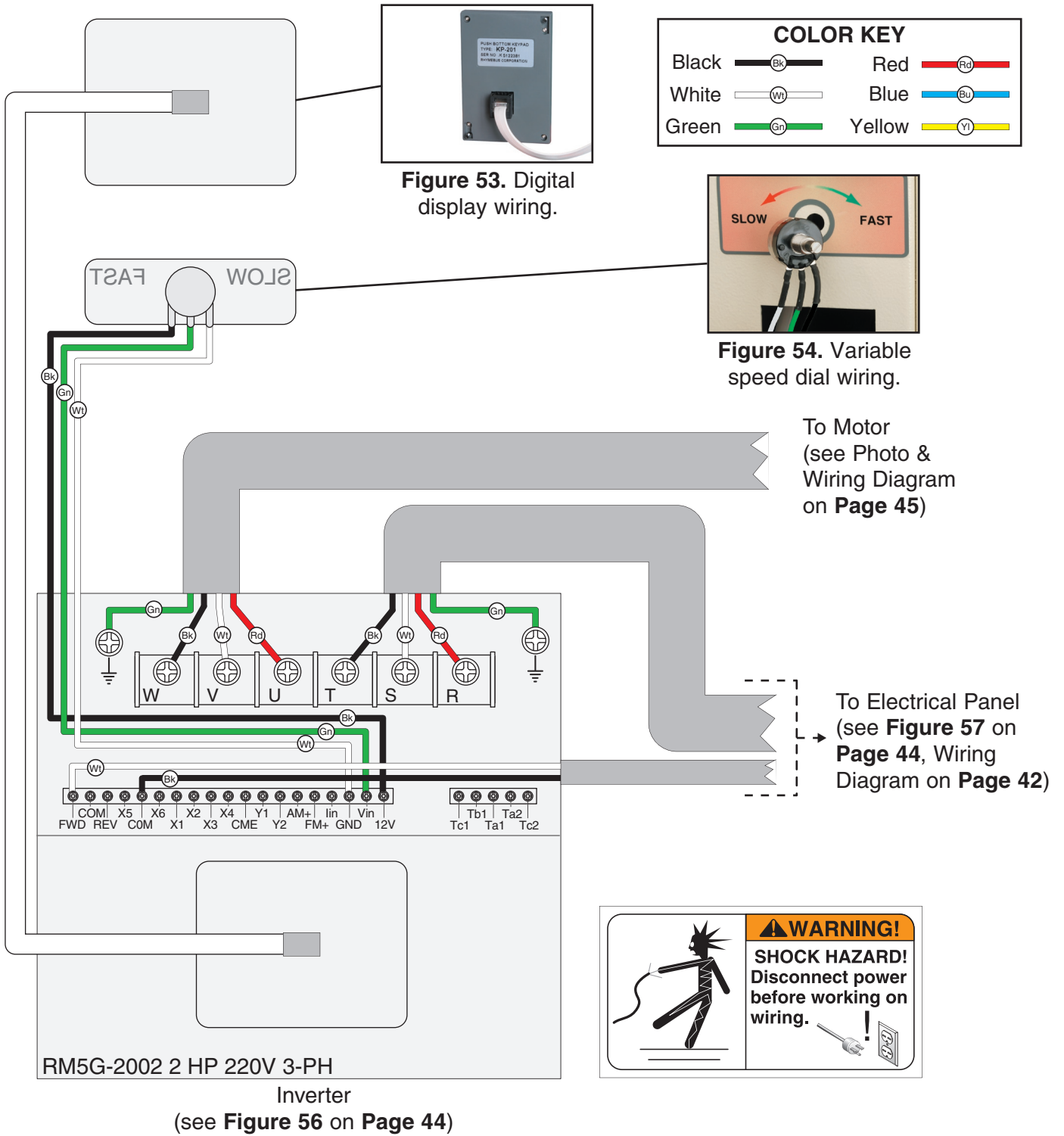
Note: *Make sure to re-adjust the blade guides and support (as directed in **Adjusting Blade Guides & Support** on **Page 26**) after making these changes.*



Electrical & Control Wiring Diagram



Inverter Wiring Diagram



COLOR KEY			
Black		Red	
White		Blue	
Green		Yellow	

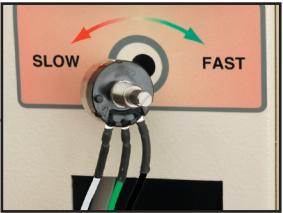


Figure 54. Variable speed dial wiring.

To Motor
(see Photo & Wiring Diagram on Page 45)

To Electrical Panel
(see Figure 57 on Page 44, Wiring Diagram on Page 42)

⚠ WARNING!
SHOCK HAZARD!
Disconnect power before working on wiring.



Electrical Components

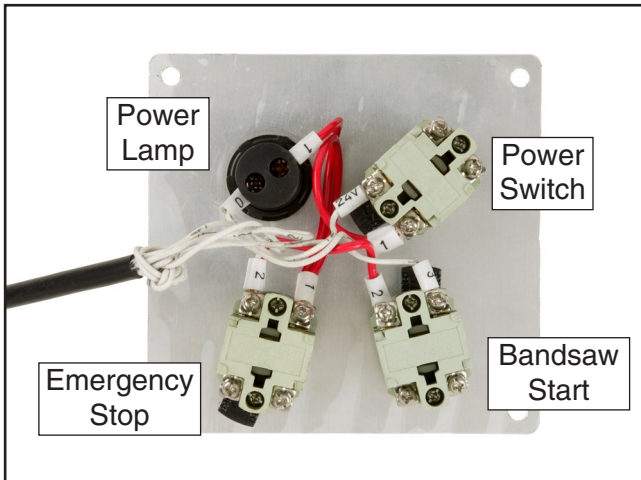


Figure 55. Control panel wiring (see wiring diagram on **Page 42**).

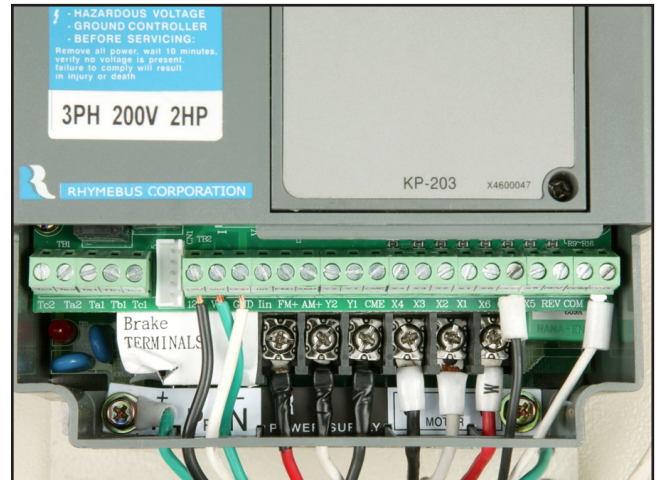


Figure 56. Inverter/Controller box wiring (see wiring diagram on **Page 43**).

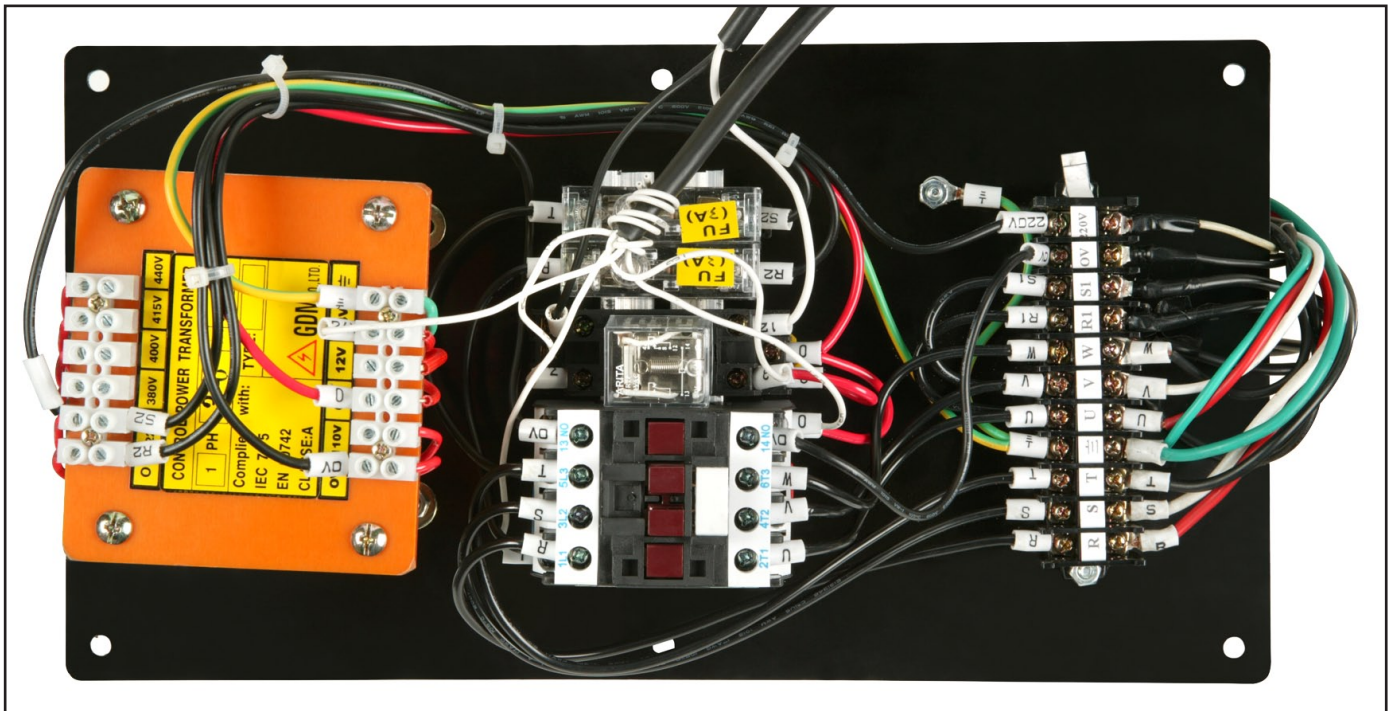


Figure 57. Main electrical wiring (see wiring diagram on **Page 42**).



Motor Wiring Diagram

COLOR KEY	
Black	
White	
Green	
Red	

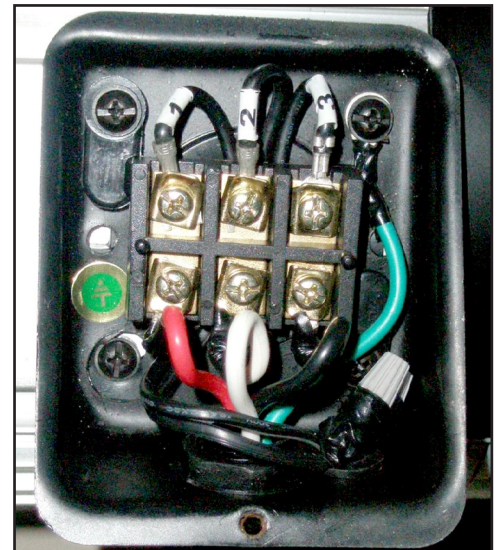
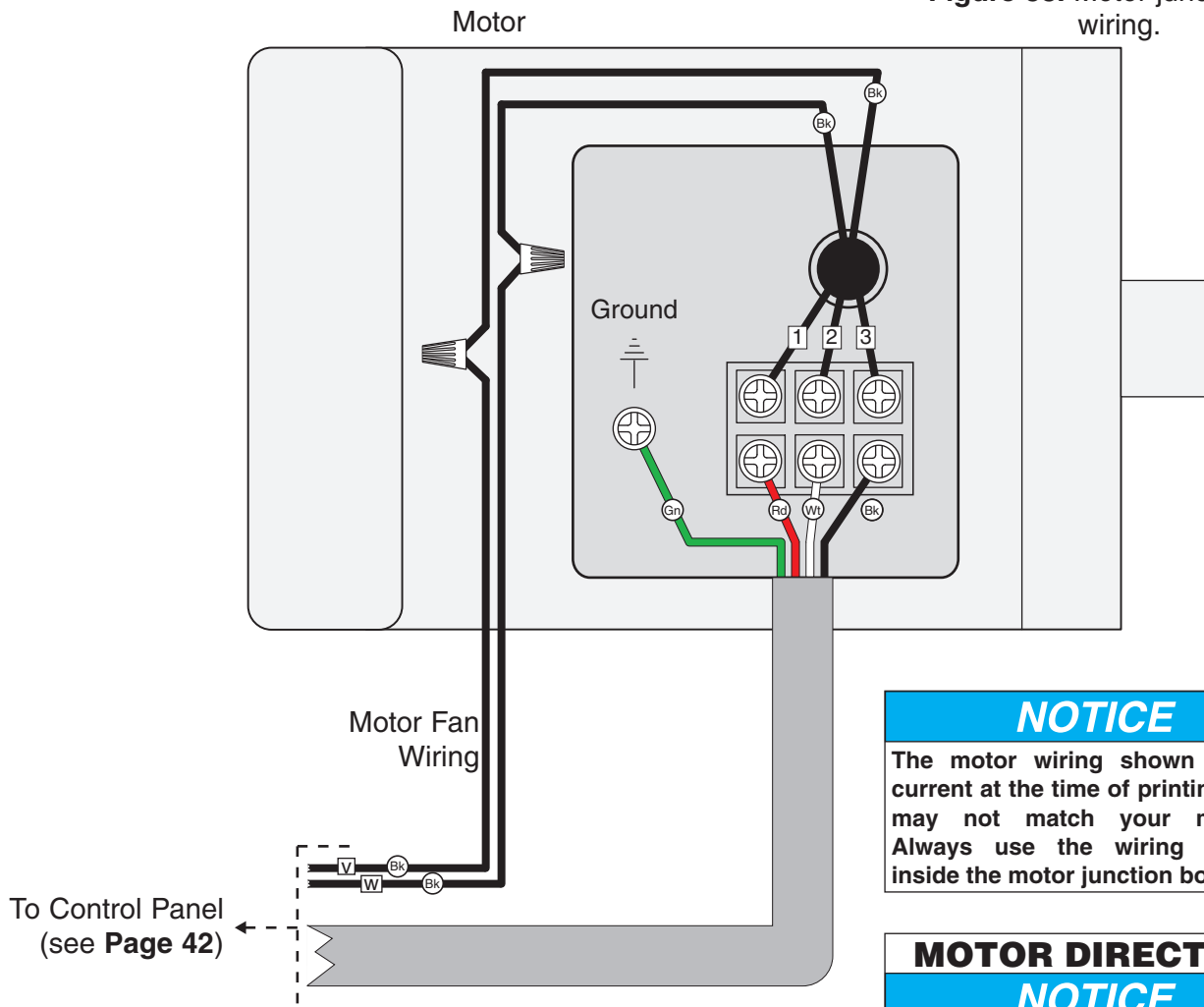


Figure 58. Motor junction box wiring.



NOTICE
The motor wiring shown here is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

MOTOR DIRECTION NOTICE
If motor rotates in opposite direction, swap any two power source wires at the incoming terminals.



Welding Station Wiring Diagram

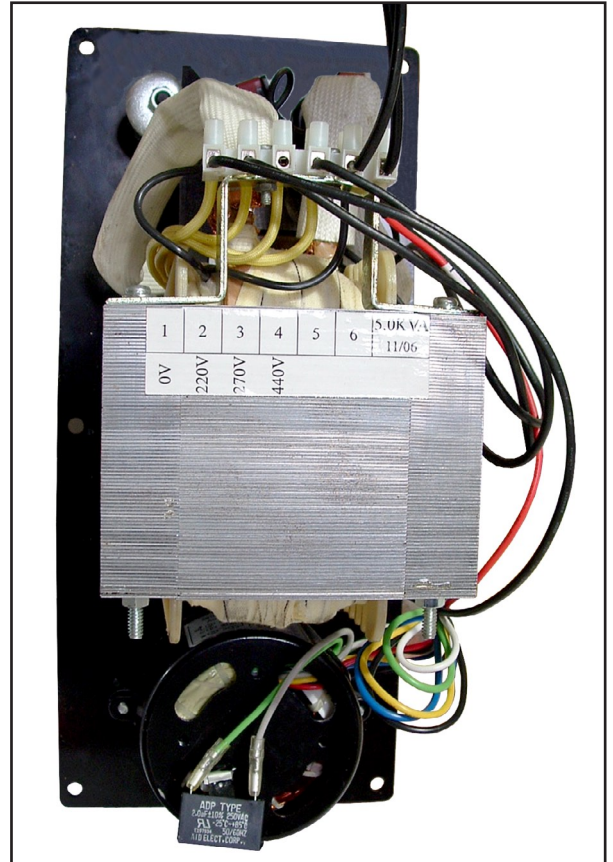
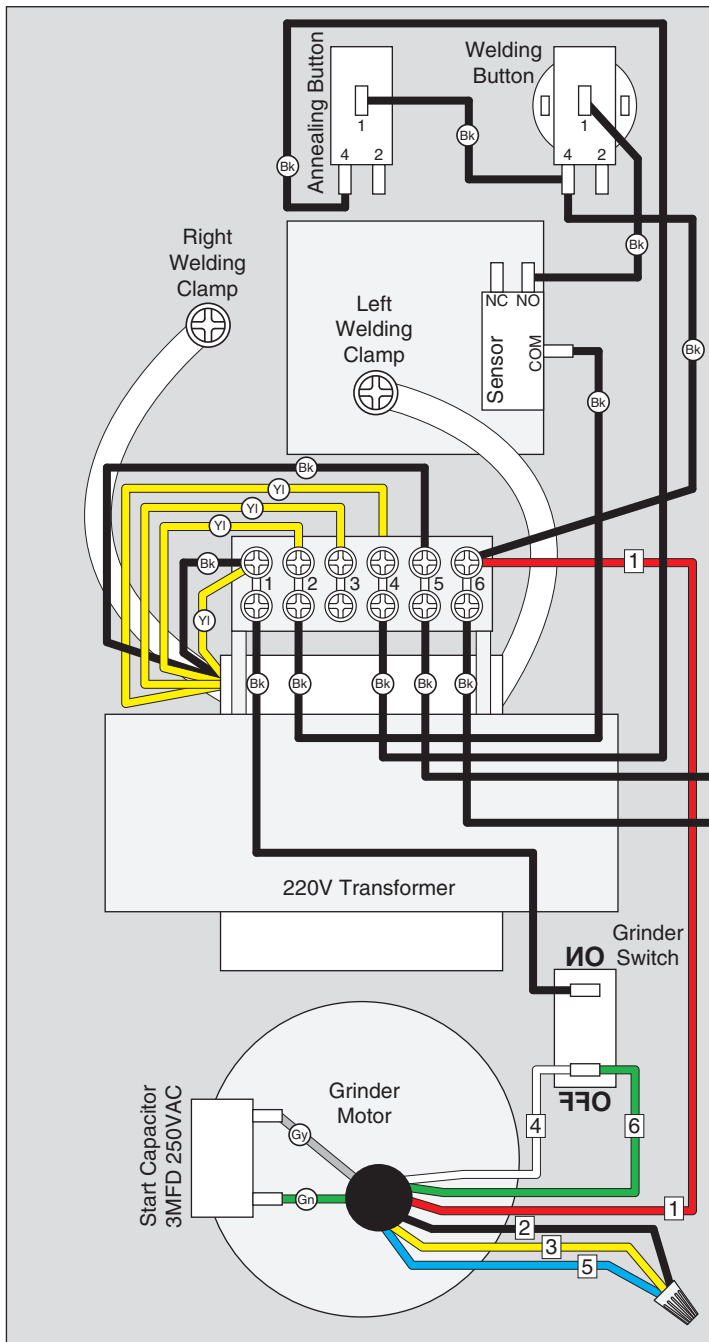


Figure 59. Welding station wiring.

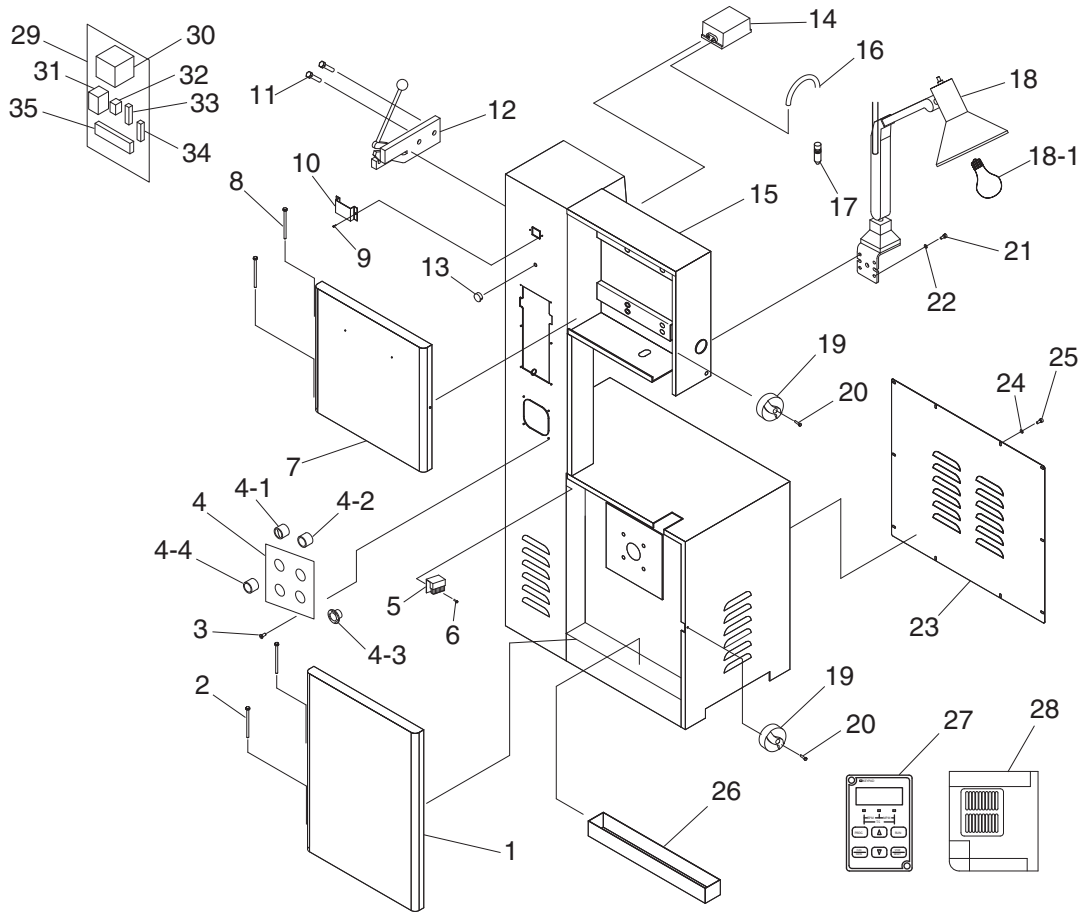
S1
R1
To Electrical Panel
(see Page 42)

COLOR KEY			
Black		Red	
White		Gray	
Green		Yellow	
Blue			



SECTION 8: PARTS

Cabinet

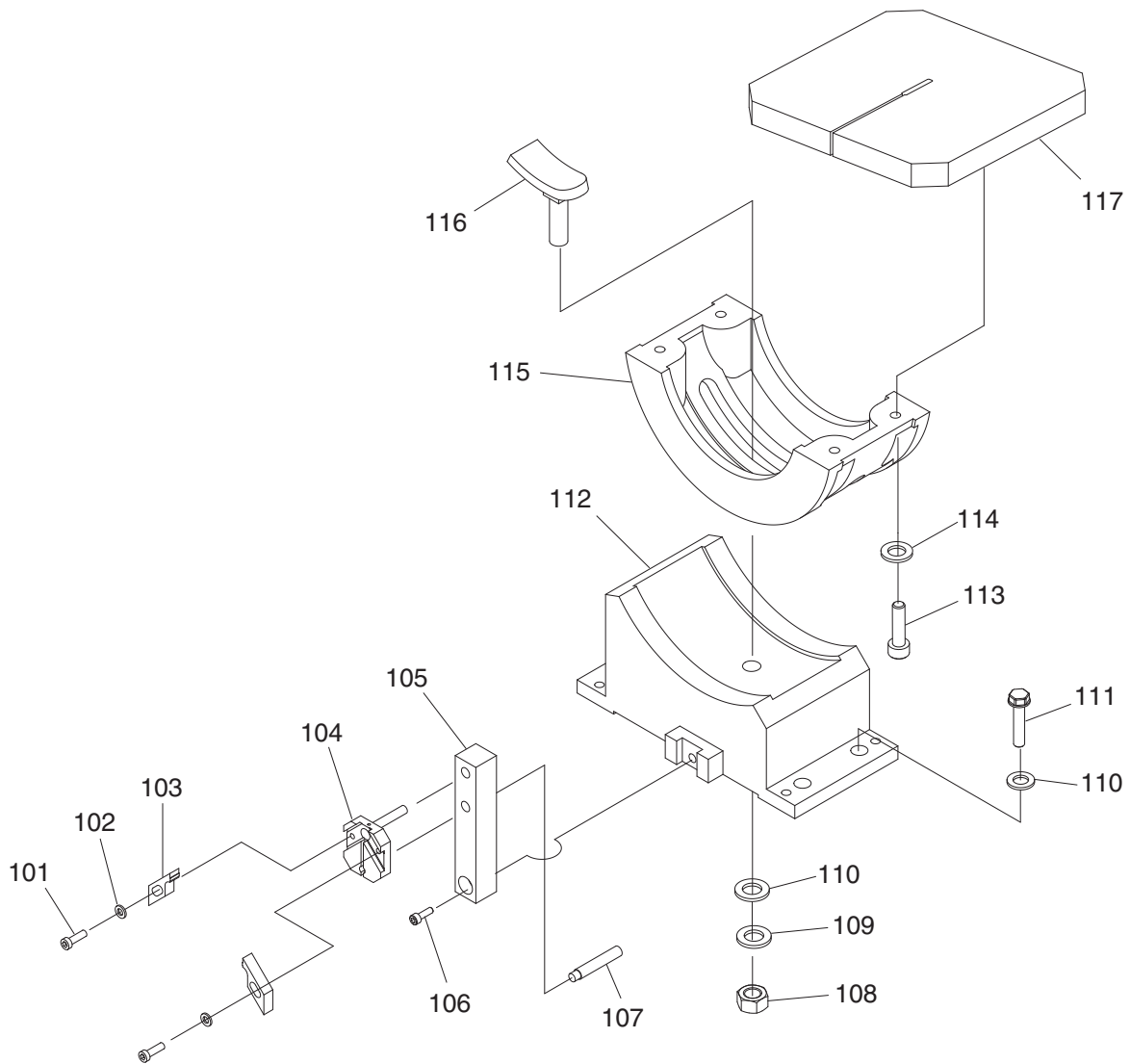


REF	PART #	DESCRIPTION
1	P0668001	WHEEL DOOR LOWER
2	P0668002	HINGE PIN LOWER
3	PS05M	PHLP HD SCR M5-.8 X 8
4	P0668004	CONTROL PANEL
4-1	P0668004-1	POWER SWITCH W/KEY
4-2	P0668004-2	POWER LAMP
4-3	P0668004-3	EMERGENCY STOP BUTTON
4-4	P0668004-4	MOTOR ON BUTTON
5	P0668005	BLADE CLEANING BRUSH
6	PS47M	PHLP HD SCR M6-1 X 25
7	P0668007	WHEEL DOOR UPPER
8	P0668008	HINGE PIN UPPER
9	PS05M	PHLP HD SCR M5-.8 X 8
10	P0668010	DIGITAL DISPLAY BRACKET
11	PSB11M	CAP SCREW M8-1.25 X 16
12	P0668012	BLADE SHEAR
13	P0668013	VARIABLE SPEED DIAL
14	P0668014	AIR PUMP
15	P0668015	BANDSAW CABINET
16	P0668016	AIR HOSE 4X6MM

REF	PART #	DESCRIPTION
17	P0668017	AIR NOZZLE
18	P0668018	WORK LAMP 220V
18-1	P0668018-1	LIGHT BULB 220V
19	P0668019	DOOR KNOB
20	PS47M	PHLP HD SCR M6-1 X 25
21	PSB28M	CAP SCREW M6-1 X 15
22	PW03M	FLAT WASHER 6MM
23	P0668023	MOTOR ACCESS PANEL
24	PW03M	FLAT WASHER 6MM
25	PB04M	HEX BOLT M6-1 X 10
26	P0668026	CHIP PAN
27	P0668027	DIGITAL DISPLAY
28	P0668028	INVERTER RM5G 2HP 220V 3PH
29	P0668029	CONTROL PANEL
30	P0668030	TRANSFORMER 1PH 0-3VA
31	P0668031	CONTACTOR NHD C-12D 220V
32	P0668032	RELAY ARITA MR2P 24V 3-5A
33	P0668033	FUSE HOLDER
34	P0668034	FUSE 3A
35	P0668035	TERMINAL BLOCK 11-POST



Table & Lower Guide

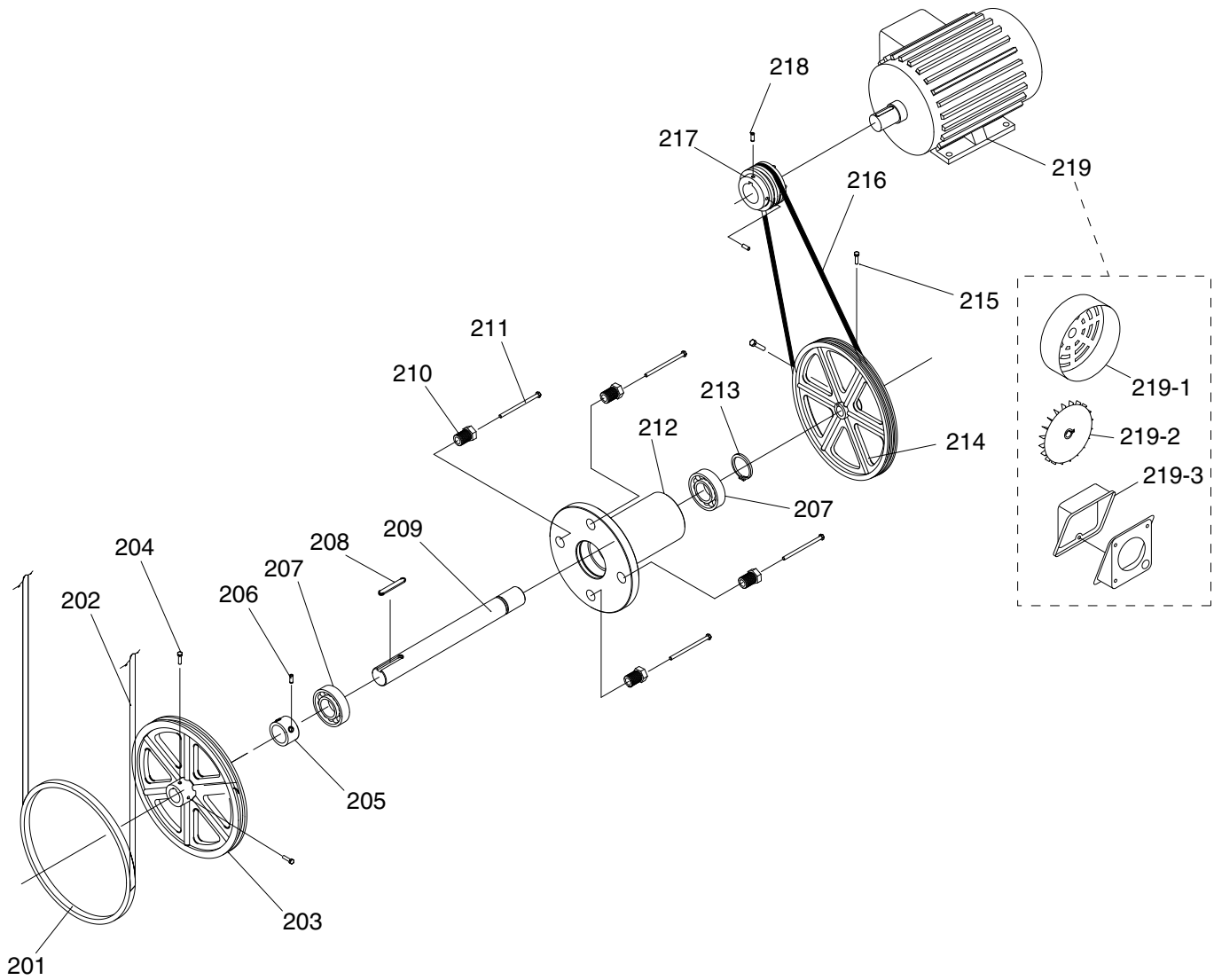


REF	PART #	DESCRIPTION
101	PSB02M	CAP SCREW M6-1 X 20
102	PLW03M	LOCK WASHER 6MM
103	P0668103	BLADE GUIDE
104	P0668104	BLADE GUIDE BRACKET LOWER
105	P0668105	GUIDE POST LOWER
106	PSB06M	CAP SCREW M6-1 X 25
107	P0668107	BLADE SUPPORT
108	PN04	HEX NUT 5/8-11
109	PLW06	LOCK WASHER 5/8

REF	PART #	DESCRIPTION
110	PW01M	FLAT WASHER 8MM
111	PSB14M	CAP SCREW M8-1.25 X 20
112	P0668112	TRUNNION BASE
113	PSB14M	CAP SCREW M8-1.25 X 20
114	PW01M	FLAT WASHER 8MM
115	P0668115	TRUNNION
116	P0668116	TABLE TILT LOCK 5/8-11 X 2
117	P0668117	TABLE



Motor & Lower Wheel

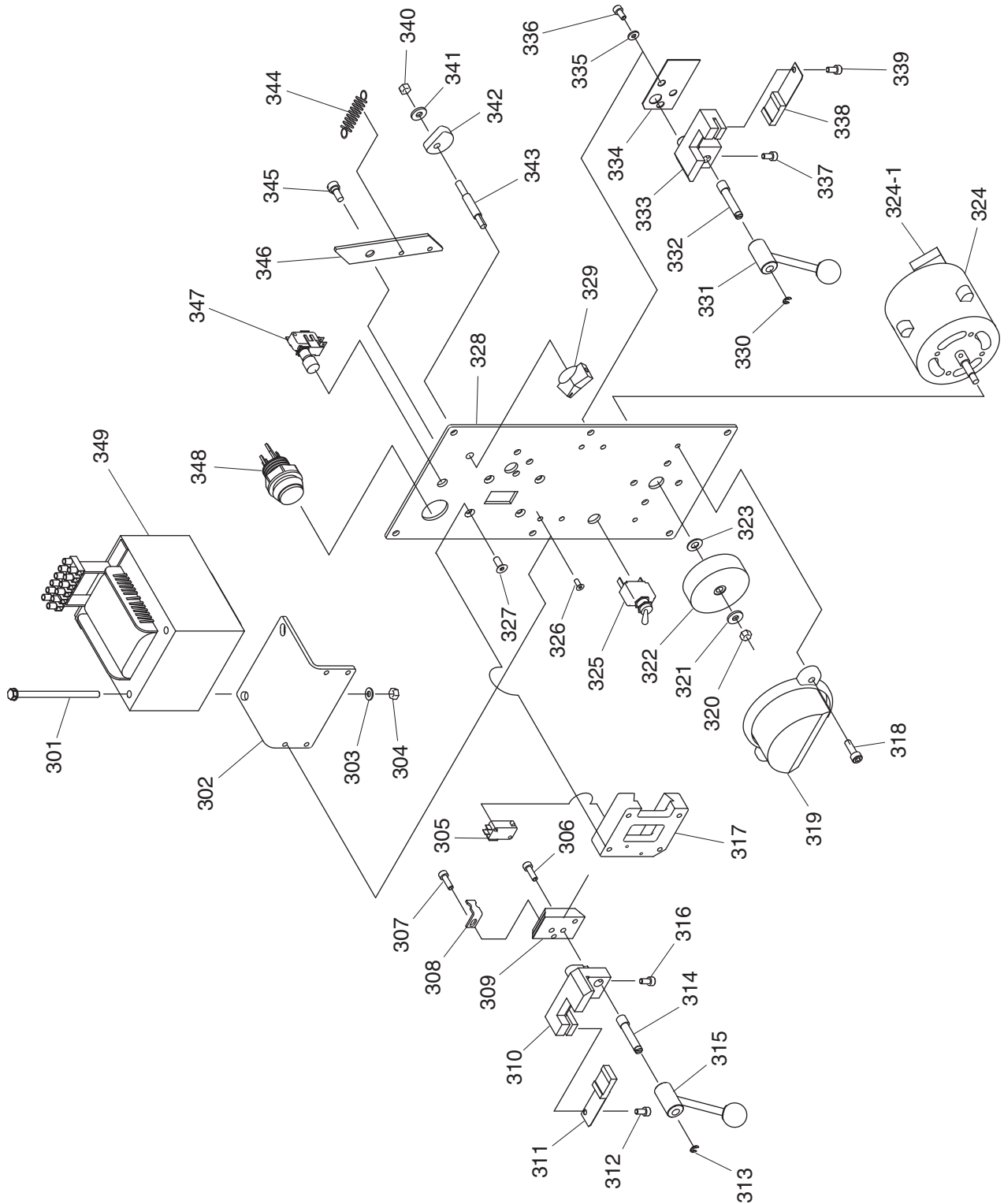


REF	PART #	DESCRIPTION
201	P0668201	WHEEL TIRE
202	P0668202	BANDSAW BLADE 3/8"W STANDARD
203	P0668203	WHEEL LOWER
204	PB170M	HEX BOLT M10-1.5 X 10
205	P0668205	COLLAR
206	PSS20M	SET SCREW M8-1.25 X 8
207	P6206Z	BALL BEARING 6206Z
208	PK107M	KEY 8 X 8 X 20
209	P0668209	LOWER WHEEL SHAFT
210	P0668210	SPECIAL SCREW
211	PB73M	HEX BOLT M10-1.5 X 50

REF	PART #	DESCRIPTION
212	P0668212	BEARING HOUSING
213	PR15M	EXT RETAINING RING 30MM
214	P0668214	WHEEL PULLEY
215	PSS105M	SET SCREW M12-1.75 X 35
216	PVA66	V-BELT A-66 4L660
217	P0668217	MOTOR PULLEY
218	PSS16M	SET SCREW M8-1.25 X 10
219	P0668219	MOTOR 2HP 220V 3PH
219-1	P0668219-1	MOTOR FAN COVER
219-2	P0668219-2	MOTOR FAN
219-3	P0668219-3	MOTOR WIRING JUNCTION BOX



Welding Station



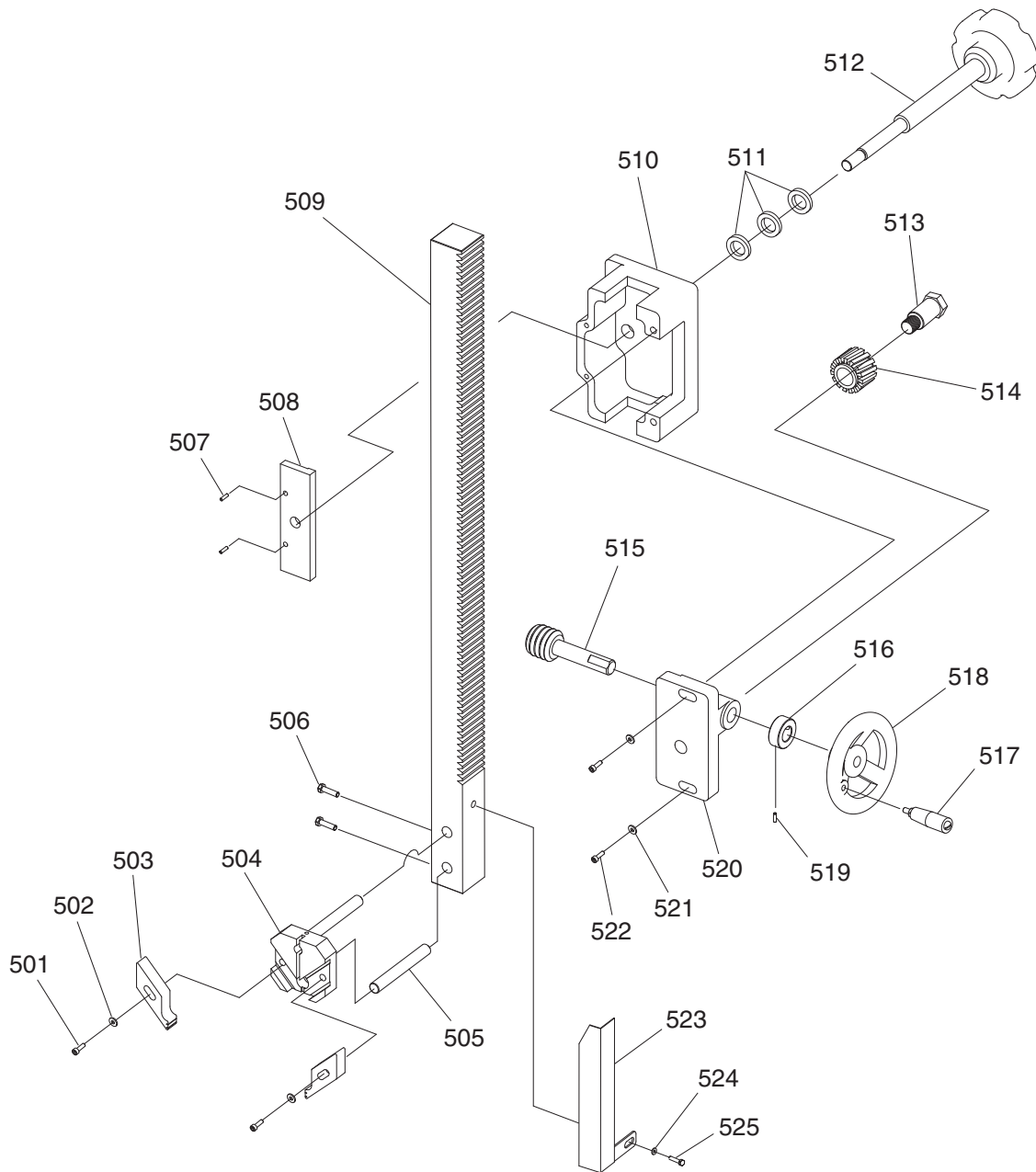
Welding Station Parts List

REF	PART #	DESCRIPTION
301	PB96	HEX BOLT 1/4-20 X 4
302	P0668302	TRANSFORMER BRACKET
303	PW03M	FLAT WASHER 6MM
304	PN01M	HEX NUT M6-1
305	P0668305	LIMIT SWITCH
306	PSB06M	CAP SCREW M6-1 X 25
307	PSB04M	CAP SCREW M6-1 X 10
308	P0668308	LIMIT SWITCH BRACKET
309	P0668309	SLIDING BLOCK
310	P0668310	WELDING CLAMP LEFT
311	P0668311	WELDING JAW LEFT
312	PSB26M	CAP SCREW M6-1 X 12
313	PEC09M	E-CLIP 6MM
314	P0668314	SHAFT
315	P0668315	CLAMP LEVER
316	PSB26M	CAP SCREW M6-1 X 12
317	P0668317	SLIDING BLOCK BASE
318	PSB01M	CAP SCREW M6-1 X 16
319	P0668319	GRINDER COVER
320	PN01M	HEX NUT M6-1
321	PW03M	FLAT WASHER 6MM
322	P0668322	GRINDING WHEEL 2-1/2"D
323	PW03M	FLAT WASHER 6MM
324	P0668324	GRINDER MOTOR 1/8HP 220V 1PH
324-1	P0668324-1	S CAPACITOR 3M 250V 3/4 X 1-1/4

REF	PART #	DESCRIPTION
325	P0668325	ON/OFF SWITCH
326	PS11M	PHLP HD SCR M6-1 X 16
327	PS26M	PHLP HD SCR M6-1 X 20
328	P0668328	WELDING PANEL
329	P0668329	CLAMP PRESSURE KNOB
330	PEC09M	E-CLIP 6MM
331	P0668331	CLAMP LEVER
332	P0668332	SHAFT
333	P0668333	WELDING CLAMP RIGHT
334	P0668334	INSULATING PLATE
335	PW03M	FLAT WASHER 6MM
336	PSB02M	CAP SCREW M6-1 X 20
337	PSB02M	CAP SCREW M6-1 X 20
338	P0668338	WELDING JAW RIGHT
339	PSB02M	CAP SCREW M6-1 X 20
340	PN01M	HEX NUT M6-1
341	PW03M	FLAT WASHER 6MM
342	P0668342	PRESSURE CAM
343	P0668343	CAM SHAFT
344	P0668344	TENSION SPRING
345	PS04	PHLP HD SCR 1/4-20 X 1/2
346	P0668346	BRACKET
347	P0668347	ANNEALING PUSH BUTTON
348	P0668348	WELDING PUSH BUTTON
349	P0668349	TRANSFORMER 4.2KVA 220V



Guide Post

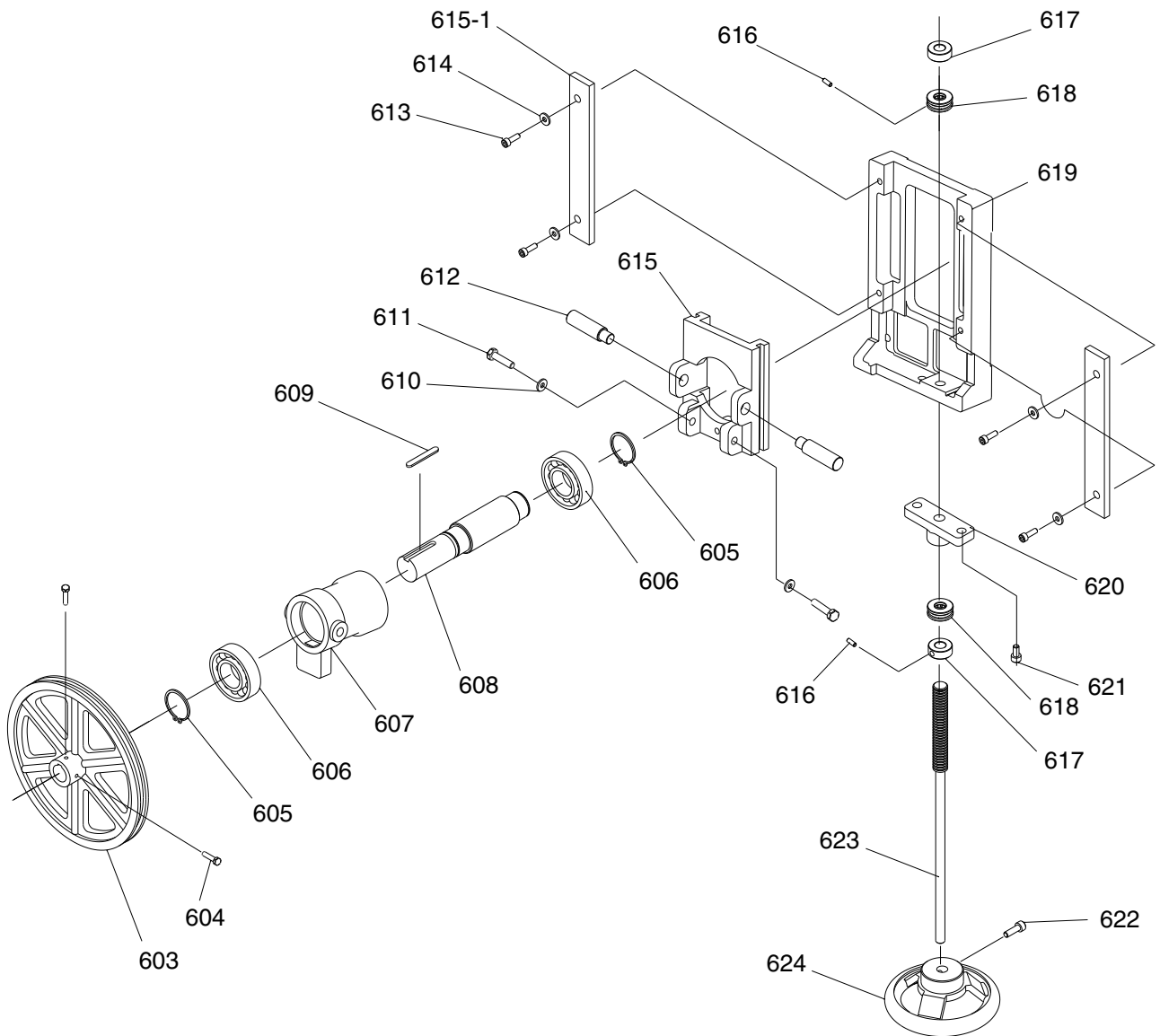


REF	PART #	DESCRIPTION
501	PSB02M	CAP SCREW M6-1 X 20
502	PW03M	FLAT WASHER 6MM
503	P0668503	BLADE GUIDE
504	P0668504	BLADE GUIDE BRACKET UPPER
505	P0668505	BLADE SUPPORT
506	PSB02M	CAP SCREW M6-1 X 20
507	P0668507	PIN 4 X 6
508	P0668508	GUIDE POST CLAMP PLATE
509	P0668509	GUIDE POST RACK
510	P0668510	GUIDE POST BRACKET
511	PLW08M	LOCK WASHER 14MM
512	P0668512	LOCK KNOB
513	P0668513	SPECIAL SCREW

REF	PART #	DESCRIPTION
514	P0668514	GUIDE POST PINION GEAR
515	P0668515	WORM GEAR
516	P0668516	COLLAR
517	P0668517	HANDWHEEL HANDLE
518	P0668518	HANDWHEEL
519	PSS02M	SET SCREW M6-1 X 6
520	P0668520	BRACKET
521	PLW03M	LOCK WASHER 6MM
522	PSB02M	CAP SCREW M6-1 X 20
523	P0668523	BLADE GUARD
524	PW01M	FLAT WASHER 8MM
525	PSB100M	CAP SCREW M8-1.25 X 15



Upper Wheel

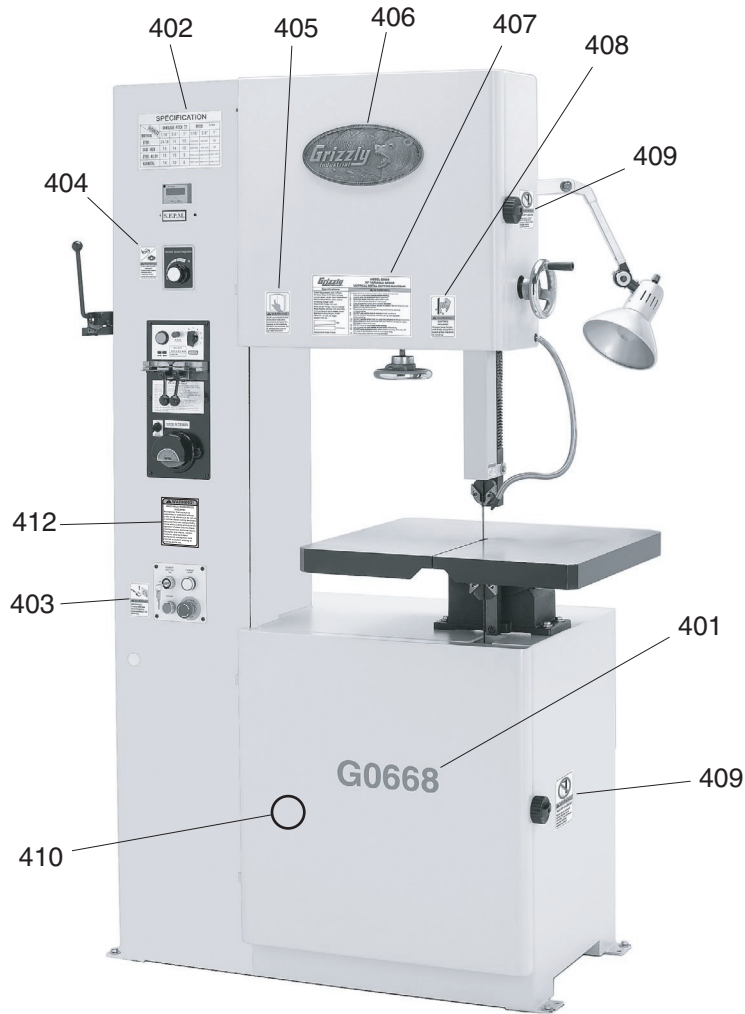


REF	PART #	DESCRIPTION
603	P0668603	WHEEL UPPER
604	PB170M	HEX BOLT M10-1.5 X 10
605	PR09M	EXT RETAINING RING 20MM
606	P6304Z	BALL BEARING 6304Z
607	P0668607	BEARING HOUSING
608	P0668608	UPPER WHEEL SHAFT
609	P0668609	KEY
610	P0668610	SPECIAL WASHER
611	P0668611	SPECIAL BOLT
612	P0668612	PIVOT PIN
613	PB07M	HEX BOLT M8-1.25 X 25
614	PW01M	FLAT WASHER 8MM

REF	PART #	DESCRIPTION
615	P0668615	UPPER WHEEL BRACKET
615-1	P0668615-1	BRACKET PLATE
616	PSS02M	SET SCREW M6-1 X 6
617	P0668617	COLLAR
618	P2901	THRUST BEARING 2901
619	P0668619	TENSIONING BRACKET
620	P0668620	LEADSCREW BRACKET
621	PB07M	HEX BOLT M8-1.25 x 25
622	PB17M	HEX BOLT M8-1.25 X 10
623	P0668623	TENSIONING LEADSCREW
624	P0668624	TENSIONING HANDWHEEL



Labels



REF	PART #	DESCRIPTION
401	P0668401	MODEL # LABEL
402	P0668402	BLADE SPECIFICATION LABEL
403	P0668403	POWER DISCONNECT LABEL VERT S
404	P0668404	EYE/LUNG HAZARD LABEL VERT L
405	PLABEL-12	READ MANUAL LABEL VERT L
406	G8588	GRIZZLY NAMEPLATE 9-1/2" X 4-1/2"

REF	PART #	DESCRIPTION
407	P0668407	MACHINE ID LABEL
408	P0668408	BLADE HAZARD LABEL VERT L
409	P0668409	DOOR INJURY HAZARD LABEL VERT S
410	PPAINT-11	GRIZZLY PUTTY TOUCH UP PAINT
412	P0668412	STABLE WORKPIECE LABEL

WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine **MUST** maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, **REPLACE** that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.





WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. **Of course, all information is strictly confidential.**

1. How did you learn about us?

- | | | |
|--|----------------------------------|----------------------------------|
| <input type="checkbox"/> Advertisement | <input type="checkbox"/> Friend | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> Card Deck | <input type="checkbox"/> Website | <input type="checkbox"/> Other: |

2. Which of the following magazines do you subscribe to?

- | | | |
|---|--|---|
| <input type="checkbox"/> Cabinet Maker | <input type="checkbox"/> Popular Mechanics | <input type="checkbox"/> Today's Homeowner |
| <input type="checkbox"/> Family Handyman | <input type="checkbox"/> Popular Science | <input type="checkbox"/> Wood |
| <input type="checkbox"/> Hand Loader | <input type="checkbox"/> Popular Woodworking | <input type="checkbox"/> Wooden Boat |
| <input type="checkbox"/> Handy | <input type="checkbox"/> Practical Homeowner | <input type="checkbox"/> Woodshop News |
| <input type="checkbox"/> Home Shop Machinist | <input type="checkbox"/> Precision Shooter | <input type="checkbox"/> Woodsmith |
| <input type="checkbox"/> Journal of Light Cont. | <input type="checkbox"/> Projects in Metal | <input type="checkbox"/> Woodwork |
| <input type="checkbox"/> Live Steam | <input type="checkbox"/> RC Modeler | <input type="checkbox"/> Woodworker West |
| <input type="checkbox"/> Model Airplane News | <input type="checkbox"/> Rifle | <input type="checkbox"/> Woodworker's Journal |
| <input type="checkbox"/> Modeltec | <input type="checkbox"/> Shop Notes | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Old House Journal | <input type="checkbox"/> Shotgun News | |

3. What is your annual household income?

- | | | |
|--|--|--|
| <input type="checkbox"/> \$20,000-\$29,000 | <input type="checkbox"/> \$30,000-\$39,000 | <input type="checkbox"/> \$40,000-\$49,000 |
| <input type="checkbox"/> \$50,000-\$59,000 | <input type="checkbox"/> \$60,000-\$69,000 | <input type="checkbox"/> \$70,000+ |

4. What is your age group?

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> 20-29 | <input type="checkbox"/> 30-39 | <input type="checkbox"/> 40-49 |
| <input type="checkbox"/> 50-59 | <input type="checkbox"/> 60-69 | <input type="checkbox"/> 70+ |

5. How long have you been a woodworker/metalworker?

- | | | | |
|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> 0-2 Years | <input type="checkbox"/> 2-8 Years | <input type="checkbox"/> 8-20 Years | <input type="checkbox"/> 20+ Years |
|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|

6. How many of your machines or tools are Grizzly?

- | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|
| <input type="checkbox"/> 0-2 | <input type="checkbox"/> 3-5 | <input type="checkbox"/> 6-9 | <input type="checkbox"/> 10+ |
|------------------------------|------------------------------|------------------------------|------------------------------|

7. Do you think your machine represents a good value? Yes No

8. Would you recommend Grizzly Industrial to a friend? Yes No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: We never use names more than 3 times. Yes No

10. Comments: _____

CUT ALONG DOTTED LINE

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Place
Stamp
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GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069



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Send a Grizzly Catalog to a friend:

Name _____
Street _____
City _____ State _____ Zip _____

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WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

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