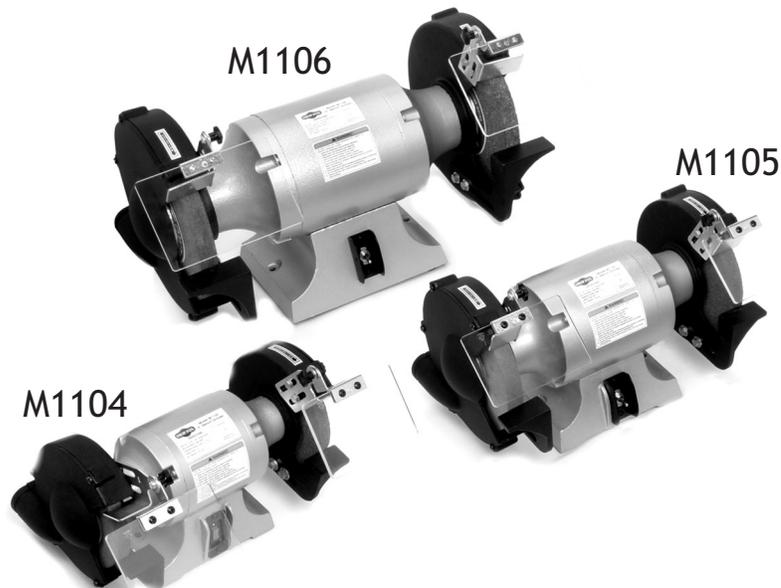




MODELS
M1104 M1105 M1106
HEAVY-DUTY BENCH
GRINDERS



OWNER'S MANUAL

Phone: 360-734-3482 • Online Technical Support: tech-support@shopfox.biz

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT
THE WRITTEN APPROVAL OF WOODSTOCK INTERNATIONAL, INC.

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.

Contents

INTRODUCTION	2
Woodstock Technical Support	2
Specifications	2
SAFETY	3
Standard Safety Instructions	3
Additional Safety Instructions for Grinders	5
ELECTRICAL	6
110V Operation	6
Extension Cords	6
Grounding	6
SET UP	7
Unpacking	7
Inventory	7
Shop Preparation	8
Mounting	8
Tool Rest and Eye Shield	9
Grinding Wheel Installation	9
Test Run	10
OPERATIONS	11
General	11
Grinding Operations	11
Wheel Selection	12
Changing Grinding Wheels	13
MAINTENANCE	14
General	14
Lubrication & Cleaning	14
Troubleshooting	15
M1104 Electrical System	16
M1105 Electrical System	17
M1106 Electrical System	18
M1104, M1105, M1106 Parts Diagram	19
PARTS	19
Warranty	22
Warranty Registration	23

USE THE QUICK GUIDE PAGE LABELS TO SEARCH OUT INFORMATION FAST!





INTRODUCTION

Woodstock Technical Support

Your new SHOP FOX® Bench Grinder has been specially designed to provide many years of trouble-free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

Woodstock International, Inc. is committed to customer satisfaction. Our intent with this manual is to include the basic information for safety, setup, operation, maintenance, and service of this product.

We stand behind our machines! In the event that questions arise about your machine, please contact Woodstock International Technical Support at (360) 734-3482 or send e-mail to: tech-support@shopfox.biz. Our knowledgeable staff will help you troubleshoot problems and process warranty claims.

If you need the latest edition of this manual, you can download it from <http://www.shopfox.biz>. If you have comments about this manual, please contact us at:

Woodstock International, Inc.
Attn: Technical Documentation Manager
P.O. Box 2309
Bellingham, WA 98227

Specifications

M1104:

Motor 1/2 HP, 110V, Single-Phase, 3450 RPM
Grinding Wheel Size, and Type 6" X (1/2" to 3/4"), Type 1
Arbor Diameter 1/2"
Weight 35 lbs

M1105:

Motor 3/4 HP, 110V, Single-Phase, 3450 RPM
Grinding Wheel Size, and Type 8" X 1", Type 1
Arbor Diameter 5/8"
Weight 56 lbs

M1106:

Motor 1 1/2 HP, 110V, Single-Phase, 1725 RPM
Grinding Wheel Size, and Type 10" X 1", Type 1
Arbor Diameter 1"
Weight 100 lbs

SAFETY

**READ MANUAL BEFORE OPERATING MACHINE.
FAILURE TO FOLLOW INSTRUCTIONS BELOW WILL
RESULT IN PERSONAL INJURY.**

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

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

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

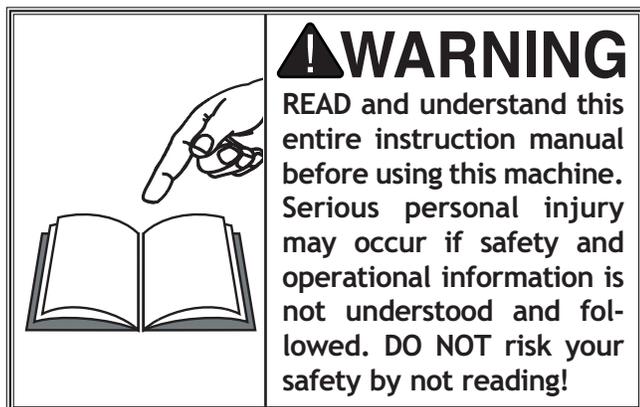
NOTICE This symbol is used to alert the user to useful information about proper operation of the equipment, and/or a situation that may cause damage to the machinery.

Standard Safety Instructions

1. **THOROUGHLY READ THE INSTRUCTION MANUAL BEFORE OPERATING YOUR MACHINE.** Learn the applications, limitations and potential hazards of this machine. Keep the manual in a safe and convenient place for future reference.
2. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and poor lighting invite potential hazards.
3. **GROUND ALL TOOLS.** If a machine is equipped with a three-prong plug, it must be plugged into a three-hole grounded electrical receptacle or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground using a screw to a known ground.
4. **WEAR EYE PROTECTION AT ALL TIMES.** Use safety glasses with side shields or safety goggles that meet the appropriate standards of the American National Standards Institute (ANSI).
5. **AVOID DANGEROUS ENVIRONMENTS.** Do not operate this machine in wet or open flame environments. Airborne dust particles could cause an explosion and severe fire hazard.
6. **ENSURE ALL GUARDS ARE SECURELY IN PLACE** and in working condition.
7. **MAKE SURE SWITCH IS IN THE OFF POSITION** before connecting power to machine.
8. **KEEP WORK AREA CLEAN**, free of clutter, grease, etc.
9. **KEEP CHILDREN AND VISITORS AWAY.** Visitors must be kept at a safe distance while operating unit.
10. **CHILDPROOF YOUR WORKSHOP WITH PADLOCKS**, master switches or by removing starter keys.
11. **STOP AND DISCONNECT THE MACHINE WHEN CLEANING, ADJUSTING OR SERVICING.**

12. **DO NOT FORCE TOOL.** The machine will do a safer and better job at the rate for which it was designed.
13. **USE CORRECT TOOL.** Do not force machine or attachment to do a job for which it was not designed.
14. **WEAR PROPER APPAREL.** Do not wear loose clothing, neck ties, gloves, jewelry, and secure long hair away from moving parts.
15. **REMOVE ADJUSTING KEYS, RAGS, AND TOOLS.** Before turning the machine on, make it a habit to check that all adjusting keys and wrenches have been removed.
16. **AVOID USING AN EXTENSION CORD.** But if you must use one, examine the extension cord to ensure it is in good condition. Immediately replace a damaged extension cord. Always use an extension cord that uses a ground pin and connected ground wire. Use an extension cord that meets the amp rating on the motor nameplate. If the motor is dual voltage, be sure to use the amp rating for the voltage you will be using. If you use an extension cord with an undersized gauge or one that is too long, excessive heat will be generated within the circuit, increasing the chance of a fire or damage to the circuit.
17. **KEEP PROPER FOOTING AND BALANCE** at all times.
18. **DO NOT LEAVE MACHINE UNATTENDED.** Wait until it comes to a complete stop before leaving the area.
19. **PERFORM ALL MACHINE MAINTENANCE.** Follow lubrication and accessory attachment instructions in the manual.
20. **KEEP MACHINE AWAY FROM OPEN FLAME.** Operating machines near pilot lights or open flames creates a high risk if dust is dispersed in the area. Dust particles and an ignition source may cause an explosion. Do not operate the machine in high-risk areas, including but not limited to, those mentioned above.
21. **IF AT ANY TIME YOU ARE EXPERIENCING DIFFICULTIES** performing the intended operation, stop using the machine! Then contact our service department or ask a qualified expert how the operation should be performed.
22. **HABITS—GOOD AND BAD—ARE HARD TO BREAK.** Develop good habits in your shop and safety will become second-nature to you.

Additional Safety Instructions for Grinders



1. **EYE PROTECTION.** Grinding causes small particles to become airborne at a high rate of speed. **ALWAYS** wear safety glasses when using this machine.
2. **MOUNTING TO BENCH/STAND.** An unsecured grinder may become dangerously out of control during operation. Make sure grinder is **FIRMLY** secured to a bench/stand before use.
3. **WHEEL SPEED RATING.** Wheels operated at a faster speed than rated for may break or fly apart. Before mounting a new wheel, be sure the wheel RPM rating is equal or higher than the speed of the grinder.
4. **WHEEL FLANGES.** Only use the flanges included with the grinder when mounting wheels. Other flanges may not properly secure the wheel and cause an accident.
5. **RING TEST.** Perform a “ring test” on grinding wheels before installation to ensure that they are safe to use. A wheel that does not pass the ring test may break or fly apart during operation.
6. **STARTING GRINDER.** If a wheel **IS** damaged, it will usually fly apart shortly after start-up. To protect yourself, always stand to the side of the grinder when turning it **ON**, allow it to gain full speed and wait for at least 1 minute before standing in front of it.
7. **LUNG PROTECTION.** Grinding produces hazardous dust, which may cause long-term respiratory problems if breathed. Always wear a NIOSH approved dust mask or respirator when grinding.
8. **SIDE GRINDING.** Grinding on the side of wheels can cause them to break and fly apart—unless the wheel is rated for side grinding.
9. **TOP GRINDING.** Grinding on the top of wheels greatly increases the risk of workpiece kickback. Always grind on the downward part of the wheel.
10. **HAND/WHEEL CONTACT.** Grinding wheels have the capability of removing a lot of skin fast. Keep a firm grip on the workpiece and position your hands a safe distance away when grinding. Avoid wearing gloves as they may get caught in the grinding wheel and cause even more serious entanglement injuries.
11. **TOOL REST POSITION.** If the tool rest is too far away from the wheel, the workpiece may be pulled down, causing loss of control and pulling your hand into the grinding wheel. Keep the tool rest within $\frac{1}{8}$ " from the wheel when operating.

ELECTRICAL

110V Operation

Your bench grinder needs a 110 volt power supply. When choosing a power supply outlet for the Model M1104 and M1105 bench grinder, use a circuit that is protected with a 15 amp circuit breaker or fuse. For the Model M1106, use a circuit that is protected with a 20 amp circuit breaker or fuse. Keep in mind that a circuit being used by other machines or tools at the same time will add to the total load being applied to the circuit. Add up the load ratings of all machines on the circuit. If this number exceeds the rating of the circuit breaker or fuse, use a different circuit.

Extension Cords

When it is necessary to use an extension cord, use the following guidelines:

- Use cords rated for Standard Service.
- Never exceed a length of 50 feet.
- Use cords with 14 ga. wire or bigger.
- Insure cord has a ground wire and pin.
- Do not use cords in need of repair.

Grounding

This grinder must be grounded! The electrical cord supplied comes with a grounding pin. Do not remove it (see **Figure 2**). If your outlet does not accommodate a ground pin, have it replaced by a qualified electrician or have an appropriate adapter installed.

Note: When using an adapter, the adapter must be grounded.

⚠ WARNING

This equipment must be grounded. Verify that any existing electrical outlet and circuit you intend to plug into is actually grounded. If it is not, it will be necessary to run a separate 12 AWG copper grounding wire from the outlet to a known ground. Under no circumstances should the grounding pin from any three-pronged plug be removed or serious injury may occur.

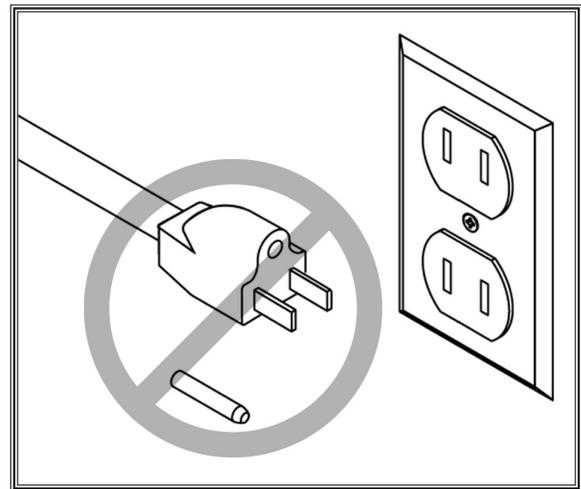


Figure 2. Never remove the grounding pin!

SET UP

Unpacking

Your SHOP FOX® Bench Grinder has been carefully packaged for safe transporting. If you notice the machine has been damaged, please contact your authorized SHOP FOX® dealer immediately.

Inventory

The following is a description of the main components shipped with your bench grinder. Lay the components out and use the list below and Figures 3 & 4 to inventory your package.

Box Inventory:

Qty.

- A. Left Lens Hanger (Eye Shield)1
- Right Lens Hanger (Eye Shield) (Not Shown).....1
- B. Toothed Flange Scr M6-1.25 x 13mm (Eye Shield) ...2
- C. Lock Washer 7mm (Eye Shield)2
- D. Flat Washer 7mm (Eye Shield)2
- E. Female Knob M6-1.25 (Eye Shield)2
- F. Hex Bolt M6-1.25 x 10mm (Eye Shield)4
- G. Flat Washer 7mm (Eye Shield)4
- H. Left Spark Arrestor (Eye Shield)1
- Right Spark Arrestor (Eye Shield)1
- I. Lens (Eye shield) (Not Shown).....2
- J. Nut Plate (Eye Shield)2
- K. Phlp Hd Scr #10-24 x 3/8" (Eye Shield)4
- L. Left Tool Rest1
- Right Tool Rest (Not Shown).....1
- M. Flat Washer 8mm (Tool Rest)4
- N. Hex Bolt 5/16"-18 x 3/4" (Tool Rest).....4
- Heavy-Duty Bench Grinder Unit (Not Shown)1

If any parts are missing, examine the packaging for the missing parts. For any missing parts, find the part number in the back of this manual and contact Woodstock International, Inc. at (360) 734-3482 or at tech-support@shopfox.biz

NOTICE

If ordering replacement parts, refer to the parts list and diagram in the back of the manual.

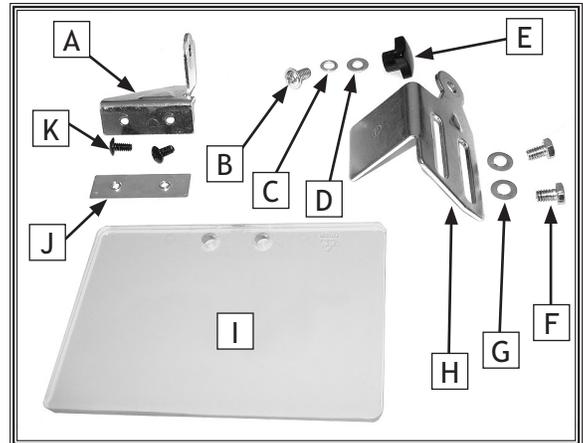


Figure 3. Left eye shield assembly.

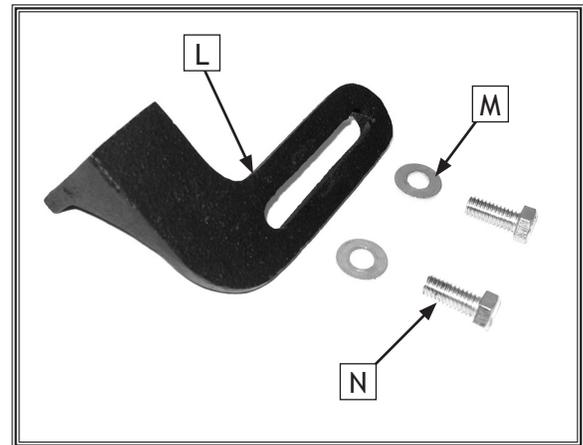


Figure 4. Left tool rest and hardware.

SET UP

Shop Preparation

- **Working Clearances:** Consider existing and anticipated needs, size of material to be processed through the machine, and space for other machinery when establishing a location for your new machine.
- **Lighting:** Lighting should be bright enough to eliminate shadow and prevent eye strain.
- **Electrical:** Electrical circuits must be dedicated or large enough to handle amperage requirements. Outlets must be located near each machine, so power or extension cords are clear of high-traffic areas. Follow local electrical codes for proper installation of new lighting, outlets, or circuits.

Mounting

The Heavy-Duty Bench Grinder must be mounted to a workbench to avoid accidental tipping. If you intend on using the grinder for portable applications, mount it to a heavy plywood base (at least 1" thick) that is wide enough to prevent tipping or rocking during use, then clamp the plywood base to the workbench or table.

To mount the Heavy-Duty Bench Grinder, do these steps:

1. Determine the surface or object to which you will mount your grinder, and obtain the needed hardware for your mounting application.
2. Fasten the grinder to your supporting surface, using the dimensions in **Figure 5**. DO NOT overtighten the mounting bolts or you will crack the base.
3. Check the stability of the mounted grinder to make sure it is stable enough to be used safely.
4. Always make sure the grinder is bolted or clamped to the workbench, table, or grinder stand before use.

⚠ CAUTION

MAKE your shop "child safe." Ensure that your workplace is inaccessible to youngsters by closing and locking all entrances when you are away. NEVER allow untrained visitors in your shop when assembling, adjusting or operating equipment.

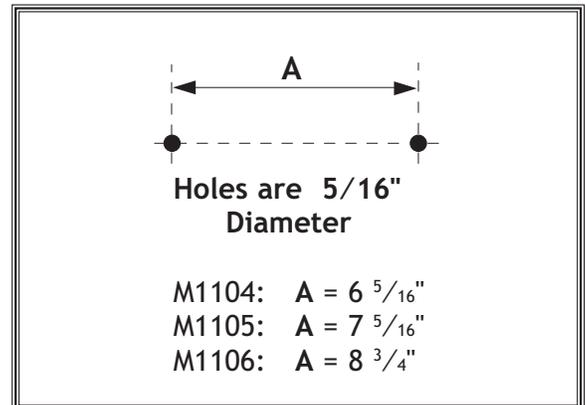


Figure 5. Bench grinder mounting bolt pattern.

SET UP

Tool Rest and Eye Shield

The tool rest supports the workpiece during grinding. Certain types of grinding may require jigs or accessories to assure the proper angle of the workpiece against the wheel.

The eye shield must be installed and positioned between the grinding wheel and your face during grinding. The eye shield is NOT a substitute for safety glasses or a safety face shield. You must wear ANSI approved face and eye protection.

Using the hardware from the **Inventory** list on **Page 7**, assemble the tool rests and eye shields as they are shown in **Figures 6 & 7**.

Grinding Wheel Installation

Before installing the included grinding wheels, you must check them for integrity by performing a "ring test." Hang on a string, then lightly tap the rim of the wheel with a piece of wood such as the handle of a hammer. The wheel should have a ringing or harmonic type of sound. If the wheel responds with a dull thud it may indicate that the wheel has cracks. Do not use a wheel which is suspected of having cracks, or if there are visual chips, nicks or dents in the wheel surface. This damage can lead to wheel failure, causing the wheel to fly apart at operating speed.

Always be sure to use a Type 1 wheel that is rated for operating at 3450 RPM or greater for Models M1104/ M1105, and 1725 RPM or greater for the M1106. Install the grinding wheel, paper disk, wheel flange, and nut in the order shown in **Figure 7**, and then attach the side cover.

Note: *The arbor shaft and nut on the left-hand side of the grinder is a left-hand thread, so tightening it will require turning it counterclockwise.*

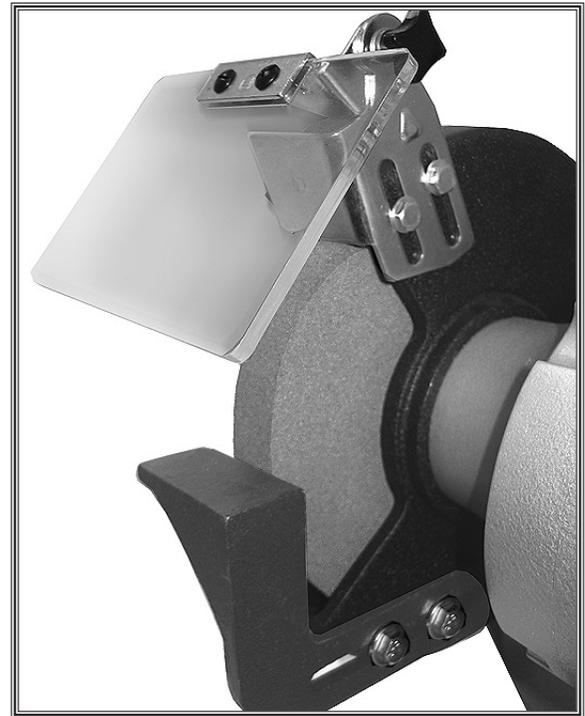


Figure 6. Tool rest and eye shield assembly.

CAUTION

NEVER assemble a grinding wheel on the arbor without paper or fiber discs between the wheel and the mounting flange. Omitting the discs can put undue stress on the wheel, causing it to crack and possibly fly apart.

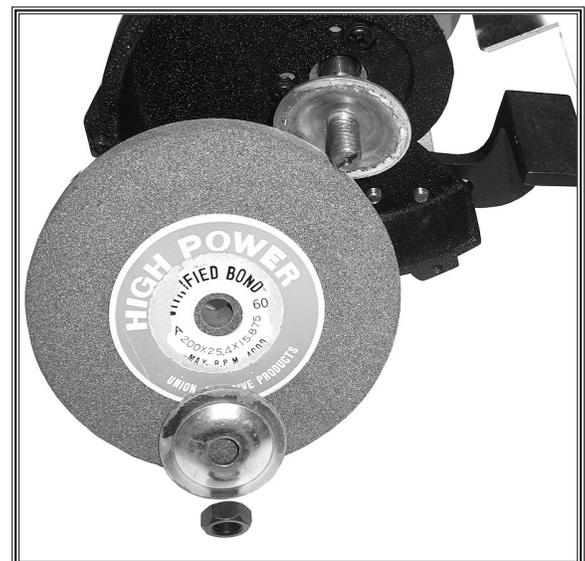


Figure 7. Grinding wheel installation order.

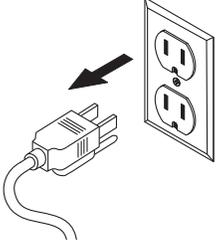
Test Run

Once your machine is mounted and assembled, you should perform a test run to make sure it works properly.

To perform a test run, do these steps:

1. Make sure all tools are removed from the grinder area.
2. Make sure the switch is in the OFF position.
3. Plug the grinder into the power source.
4. Turn the grinder **ON**. Under normal conditions, the grinder will make a humming noise, with only minor vibration.
 - If you suspect any problems, immediately turn the grinder **OFF** and refer to **Page 15** to troubleshoot and correct any problems before starting the grinder again.
 - If the source of an unusual noise or vibration is not readily apparent, contact our technical support for help at (360) 734-3482 or contact us online at tech-support@shopfox.biz.

! WARNING



DO NOT investigate problems or adjust the Heavy-Duty Bench Grinder while it is running. Wait until the machine is turned OFF, unplugged and the spindle has come to a complete stop before proceeding!

OPERATIONS

General

Your bench grinder will allow you to perform many types of grinding and buffing operations. However, the following section is not a complete guide for every possible use.

We strongly recommend that you read books, trade magazines, or seek formal training before attempting any grinding or buffing operations in which you are not confident with. **Above all, your safety should come first.** This recommended research will pay off with increased safety, improved work results, and the knowledge to be a better metalworker.

Grinding Operations

CAUTION

NEVER grind non ferrous metals like aluminum, brass, copper, bronze, and others, or the grinding wheel will load up, overheat, and can explode during operation.

Once the assembly and the test run have been completed, your Heavy-Duty Bench Grinder is ready for use.

When mounting a new wheel, or when there is any concern about wheel integrity, stand away from the line of rotation of the wheel and then turn the grinder **ON**. Allow the grinder operate for one minute. If there is a problem it will generally occur when the grinder is first started. If the grinding wheel is OK, rest the workpiece on the tool rest and ease the workpiece into the grinding wheel. Begin grinding without holding the workpiece in one spot or it will cause uneven wear on the stone face.

WARNING



Operation of this equipment has the potential to propel debris into the air which can cause eye injury. Always wear safety glasses or goggles when operating a grinder. Everyday glasses or reading glasses are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

WARNING

DO NOT make adjustments while the grinder is running. Ensure that the switch is **OFF**, power is disconnected and moving parts have stopped before making adjustments. Failure to comply could result in serious injury or electrical shock hazard.

Wheel Selection

Aluminum oxide and silicon carbide wheels are marked in a somewhat uniform manner by all the major manufacturers. Understanding these markings will help you understand the capabilities of various wheels. Always refer to the manufacturer’s grinding recommendations when selecting a wheel for your project.

The basic format for wheel numbering is:

Prefix Type	Abrasive Type	Grit Type	Grade	Bond Type
36	A	60	L	V

The most common abrasive types used are A for Aluminum Oxide and C for Silicon Carbide, and occasionally SG for seeded gel. The prefix is the manufacturer’s designation for a particular type.

The grit size is a number referring to the size of the abrasive grain in the wheel. The lower the number the coarser the wheel—10 is a very coarse wheel for roughing and 220 is usually the upper range for fine finish work.

Grade is an indication of the hardness of the wheel, with A being softest to Z the hardest.

Bond type refers to the type of bonding material used to hold the abrasive material. Most general purpose wheels will have a V indicating vitrified clay is used, providing a high strength and good porosity. The other most common is B for resin where synthetic resins are used. These are used to grind cemented carbide and ceramic materials.

There may be other numbers inserted that have meaning for a particular type of wheel. Refer to the manufacturer’s technical data for a complete explanation.

WARNING

DO NOT use this grinder with a liquid cooling system required for wet grinding wheel operations. Ignoring this warning can lead to electrocution.

Changing Grinding Wheels

Before installing any grinding wheel you must check the structural integrity by performing a “ring test.” Hang the wheel on a string, then lightly tap the rim of the wheel with a piece of wood such as the handle of a hammer. The wheel should have a ringing or harmonic type of sound. If the wheel responds with a dull thud it may indicate that the wheel has cracks. Do not use a wheel that is suspected of having cracks, or if there are visual chips, nicks or dents in the wheel surface. This damage can lead to wheel failure, causing the wheel to fly apart at operating speed.

Do not use a wheel that is suspected of having cracks, or if there are visual chips, nicks or dents in the wheel surface. This damage can lead to wheel failure where the wheel flies apart at operating speed. Always be sure to use a wheel which is rated for 3450 RPM or greater.

To change a grinding wheel, do these steps:

1. DISCONNECT THE GRINDER FROM POWER!
2. Disassemble grinder to the level shown in Figure 8.
3. Hold the wheel from turning, and remove the arbor nut which holds the wheel on.

Note: *The arbor shaft and nut on the left hand side of the grinder is a left hand thread, so loosening it will require turning it clockwise.*

4. Install the new wheel in the order shown in Figure 8 and tighten the arbor nut snugly, but do not over tighten or you will crack the wheel.
5. Run a new wheel for at least 1 minute while standing clear of the line of rotation. If a wheel does have defects it will generally fail as soon as it gets up to full speed.

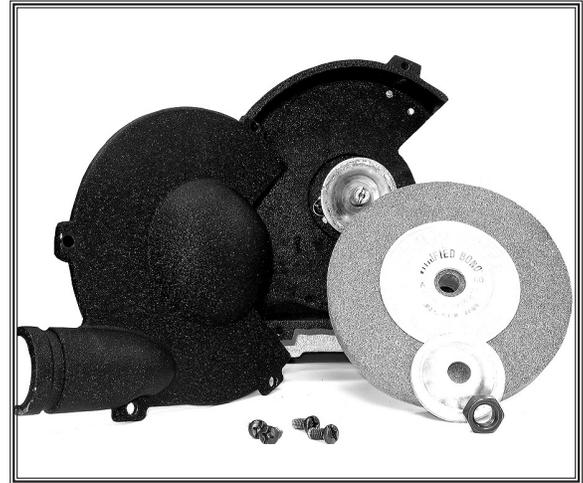


Figure 8. Grinding wheel access.

CAUTION

NEVER assemble a grinding wheel on the arbor without paper or fiber discs between the wheel and the flange. Omitting the discs can put uneven stress on the wheel causing it to crack and possibly fly apart. **ALWAYS** “ring test” a wheel before assembly to make certain it has no cracks or flaws.

MAINTENANCE

General

Check for the following conditions and repair or replace when necessary:

- Cracked or loose grinding wheel.
- Loose mounting bolts.
- Worn switch.
- Worn or damaged cords and plugs.
- Any other condition that could hamper the safe operation of this machine.

Lubrication & Cleaning

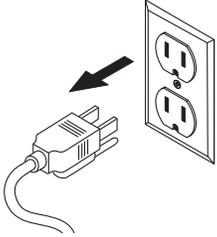
This grinder has sealed bearings that require no user lubrication.

The grinding wheel should be inspected before every use. Use the ring test method noted in **Changing Grinding Wheels** on **Page 13** to verify the structural integrity. Take care in storing grinding wheels to keep them free from potential damage by being dropped, or having other items drop on them.

Replace the wheel when the wheel diameter is reduced to 4" for the M1104, 5" for the M1105, or 6 1/2" for the M1106. Operating at anything less than this diameter does not allow the proper surface speed for grinding or spacing of the tool rest and the eye shield, and the grinding wheel may fly apart.

Depending on the type of grinding you do, the grinding wheel may require periodic dressing. There are several different types of wheel dressing devices available on the market. Use a suitable diamond or silicon carbide stick type dresser. Sweep it smoothly and evenly several times across the face of the wheel. Dressing restores the abrasive quality of the wheel surface, plus it will bring the wheel edge back to a square form. Refer to the instructions that accompany your dressing accessory for complete detail on wheel dressing.

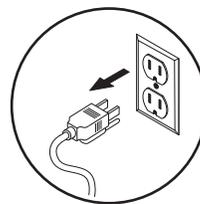
⚠ WARNING



MAKE SURE that your machine is unplugged during all maintenance procedures! If this warning is ignored, serious personal injury may occur.

Troubleshooting

This section covers the most common problems and corrections with this type of machine. **WARNING! DO NOT** make any adjustments until power is disconnected and moving parts have come to a complete stop!



PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor will not start; fuses or circuit breakers blow.	<ol style="list-style-type: none"> 1. Open circuit in motor or loose connections. 2. Start capacitor is at fault. 3. Short circuit in motor or loose connections. 4. Incorrect fuses or circuit breakers in power supply. 	<ol style="list-style-type: none"> 1. Inspect/repair all lead connections on motor for loose or open connections. 2. Replace start capacitor. 3. Inspect all connections on motor for loose or shorted terminals or worn insulation. 4. Install correct fuses or circuit breakers.
Motor overheats, stalls (resulting in blown fuses or tripped circuit).	<ol style="list-style-type: none"> 1. Motor overloaded. 2. Short circuit in motor or loose connections. 3. Depth of cut too great. 	<ol style="list-style-type: none"> 1. Reduce load on motor. 2. Inspect connections on motor for loose or shorted terminals or worn insulation. 3. Slow down the rate of movement of the workpiece into wheel.
Wavy condition on surface of workpiece.	<ol style="list-style-type: none"> 1. Machine vibrating. 2. Workpiece is not held in place firmly. 3. Wheel face uneven. 4. Wheel is too hard. 	<ol style="list-style-type: none"> 1. Make sure machine is securely mounted on a solid surface. 2. Use a holding device to firmly retain the workpiece. 3. Dress the grinding wheel. 4. Use softer wheel, or reduce the feed rate.
Lines on surface of workpiece.	<ol style="list-style-type: none"> 1. Impurity on wheel surface. 2. Workpiece not being held tightly. 	<ol style="list-style-type: none"> 1. Dress the grinding wheel. 2. Use a holding device to firmly retain the workpiece.
Burning spots or cracks in the workpiece.	<ol style="list-style-type: none"> 1. Improper type of grinding wheel. 2. Improper feed rate. 	<ol style="list-style-type: none"> 1. Try a wheel that is softer style or a coarser grit. 2. Slow down the rate of movement of the workpiece into wheel.
Wheel dulls quickly, grit falls off.	<ol style="list-style-type: none"> 1. Depth of cut too great. 2. Wheel is too soft. 3. Wheel diameter too small. 4. Bad wheel dress. 5. Defective wheel bonding. 	<ol style="list-style-type: none"> 1. Slow down the rate of movement of the workpiece into wheel. 2. Wheel too soft for the material being ground, select harder bond. 3. Replace the wheel. 4. Dress the wheel. 5. Consult manufacturer of grinding wheel.
Wheel clogs and workpiece shows burn marks.	<ol style="list-style-type: none"> 1. Wheel is too hard. 2. Feed rate too slow. 3. Bad wheel dress. 4. Wrong material is being ground. 	<ol style="list-style-type: none"> 1. Wheel too hard for the material being ground, select softer bond. 2. Increase the rate of movement of the workpiece into wheel. 3. Dress the wheel. 4. Grind ferrous metals only.

M1104 Electrical System

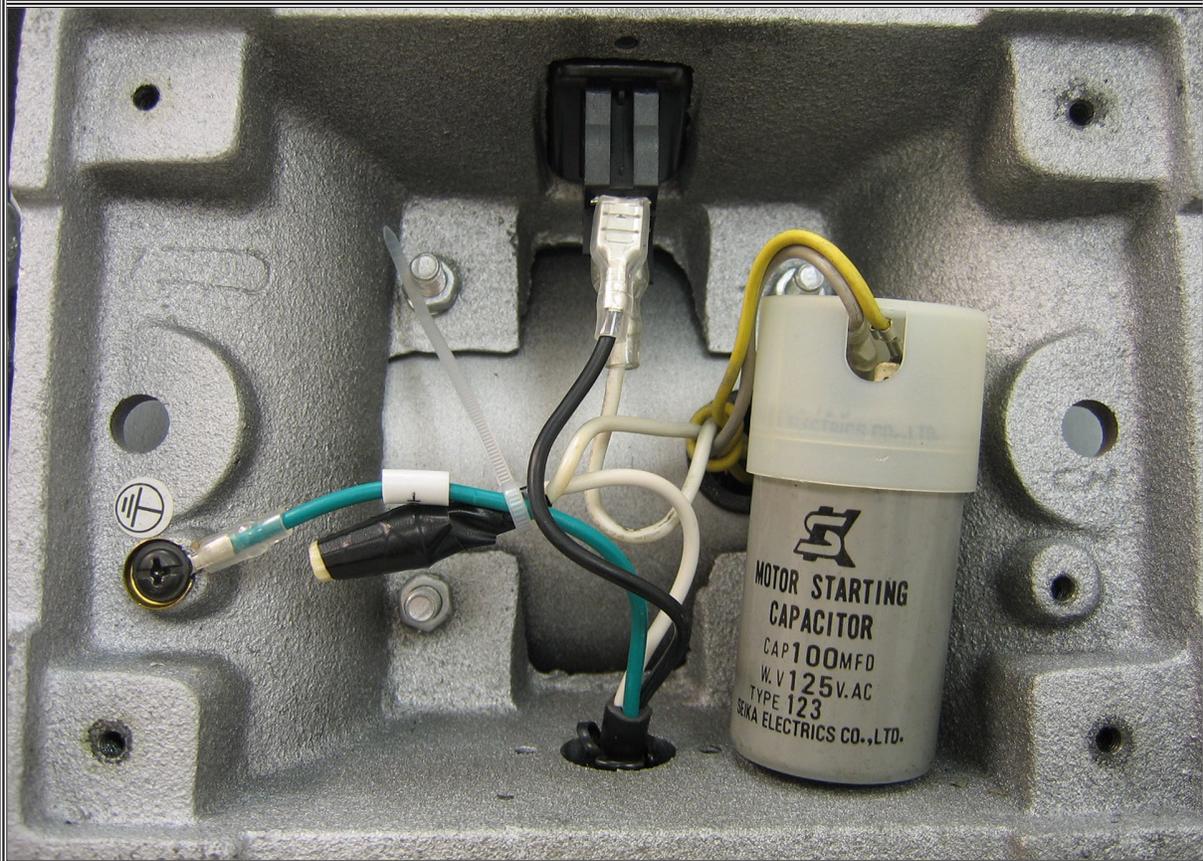
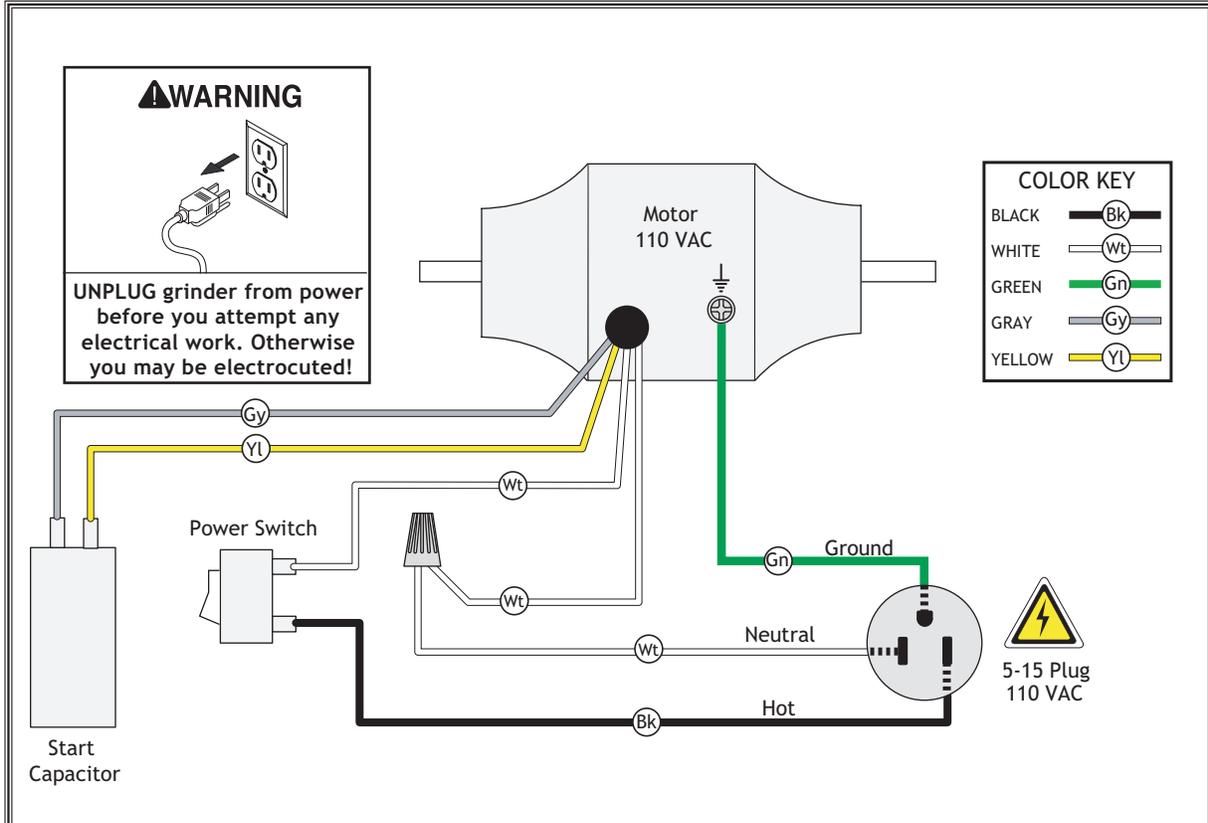


Figure 9. M1104 Wiring.

M1105 Electrical System

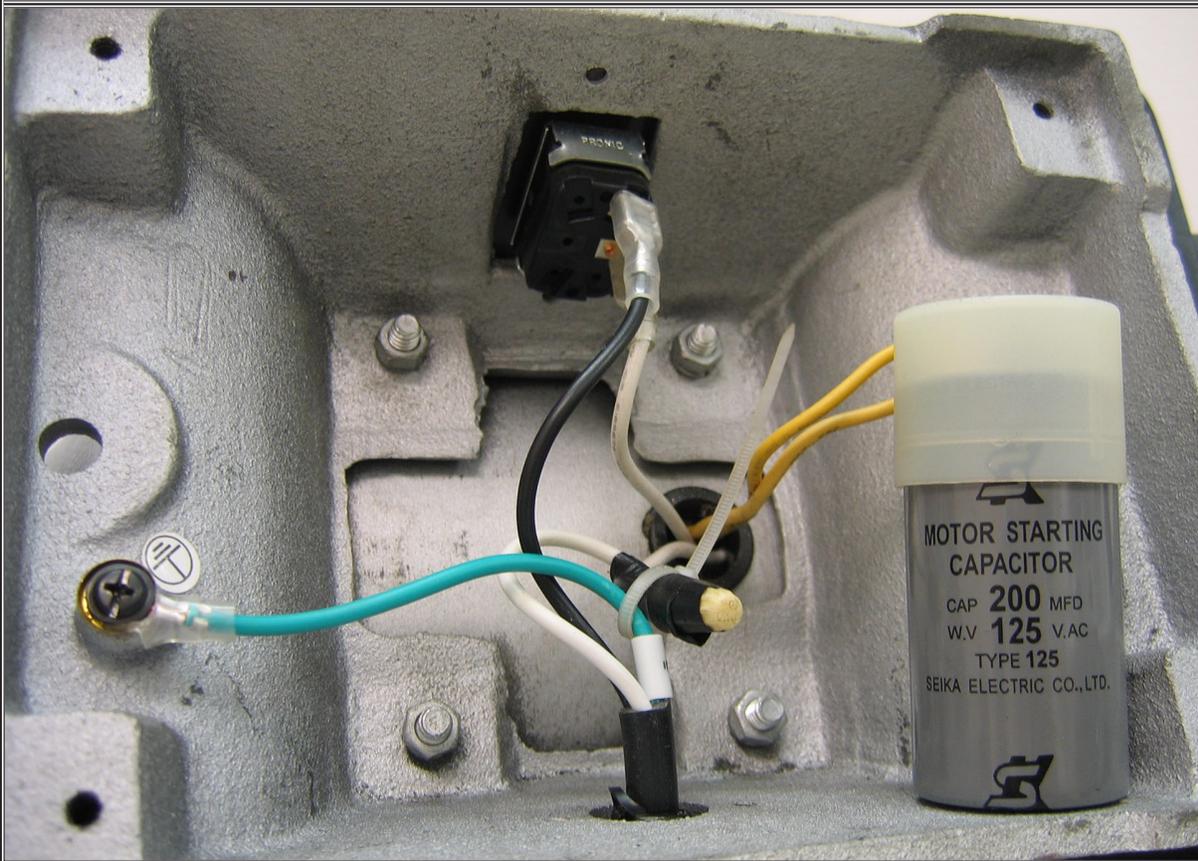
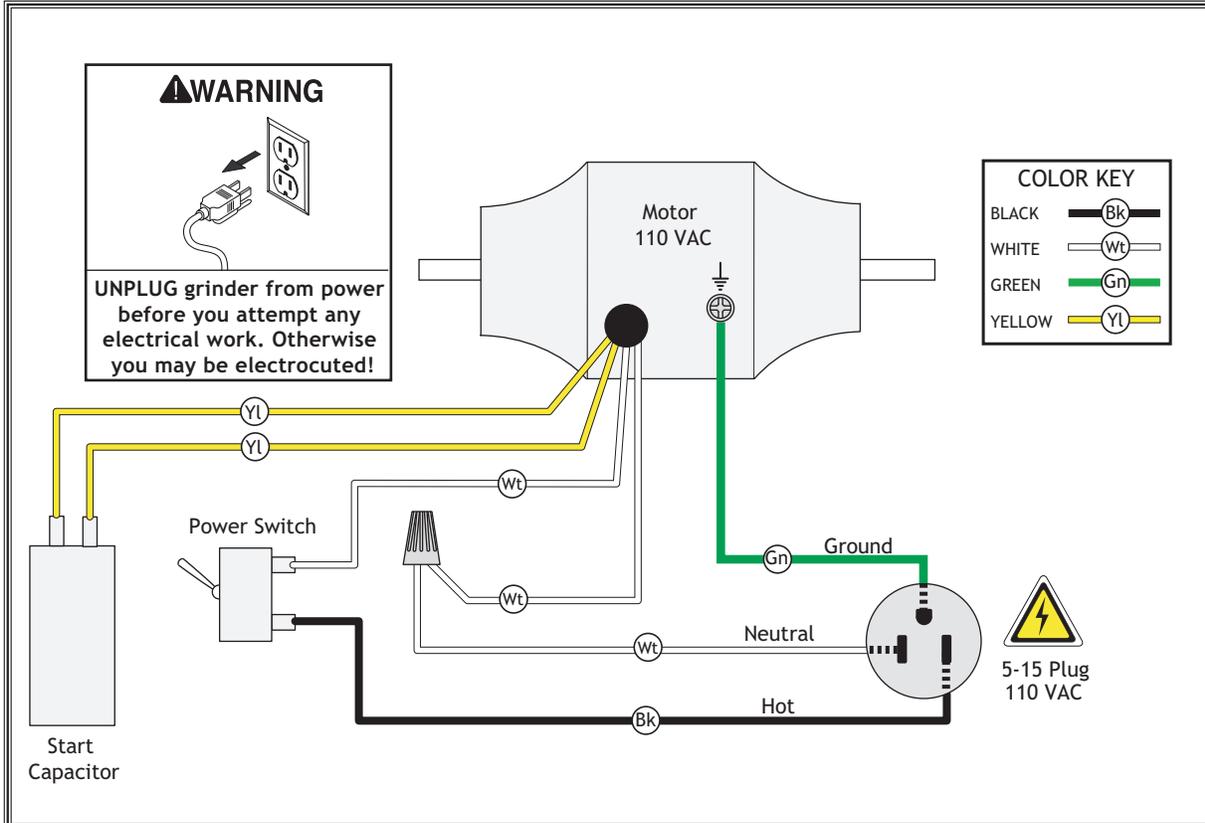


Figure 10. M1105 Wiring.

M1106 Electrical System

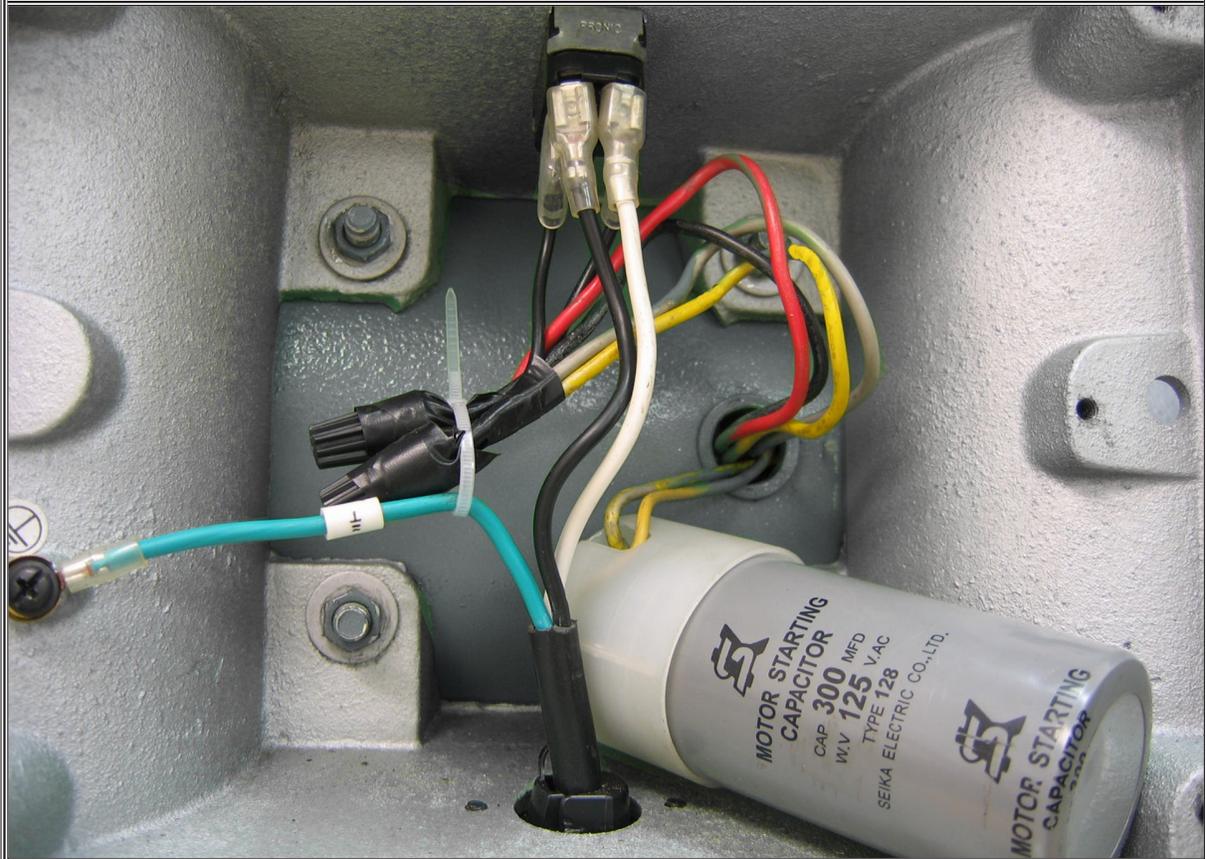
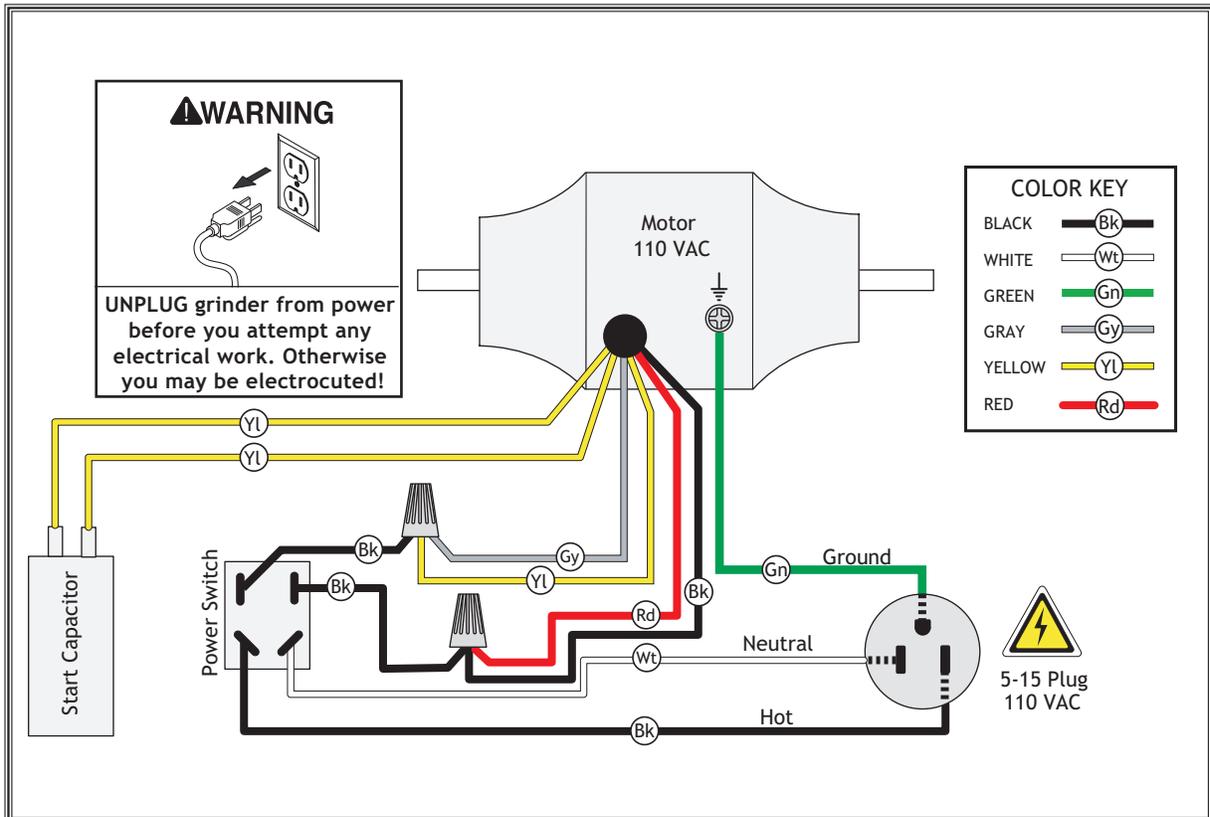
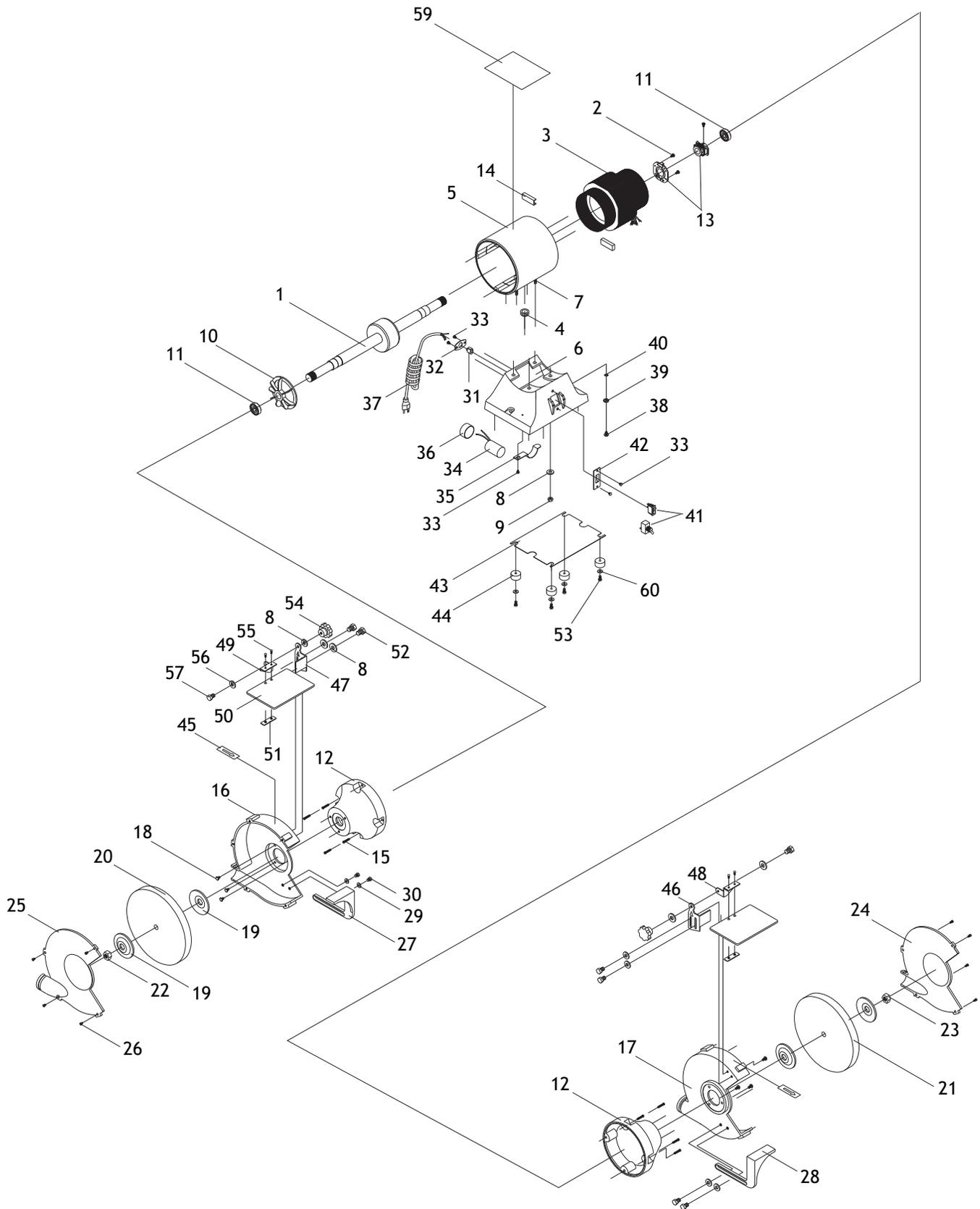


Figure 11. M1106 Wiring.

M1104, M1105, M1106 Parts Diagram



REF	PART #	DESCRIPTION
1	XM1104001	ROTOR AND SHAFT (M1104)
	XM1105001	ROTOR AND SHAFT (M1105)
	XM1106001	ROTOR AND SHAFT (M1106)
2	XPS06	PHLP HD SCR 10-24 X 3/8
3	XM1104003	STATOR (M1104)
	XM1105003	STATOR (M1105)
	XM1106003	STATOR (M1106)
4	XM1104004	STRAIN RELIEF
5	XM1104005	MOTOR HOUSING (M1104)
	XM1105005	MOTOR HOUSING (M1105)
	XM1106005	MOTOR HOUSING (M1106)
6	XM1104006	BASE (M1104)
	XM1105006	BASE (M1105)
	XM1106006	BASE (M1106)
7	XPSS07	SET SCREW 1/4-20 X 1/2
8	XPW06	FLAT WASHER 1/4
9	XPN05	HEX NUT 1/4-20
10	XM1104010	FAN (M1104)
	XM1105010	FAN (M1105)
	XM1106010	FAN (M1106)
11	XP6202	BALL BEARING 6202ZZ (M1104)
	XP6204	BALL BEARING 6204ZZ (M1105)
	XP6206	BALL BEARING 6206ZZ (M1106)
12	XM1104012	MOTOR COVER (M1104)
	XM1105012	MOTOR COVER (M1105)
	XM1106012	MOTOR COVER (M1106)
13	XM1104013	CENTRIFUGAL SWITCH ASSY. (M1104)
	XM1105013	CENTRIFUGAL SWITCH ASSY. (M1105)
	XM1106013	CENTRIFUGAL SWITCH ASSY. (M1106)
14	XM1104014	CENTRIFUGAL SWITCH PLATE (M1104)
	XM1105014	CENTRIFUGAL SWITCH PLATE (M1105)
	XM1106014	CENTRIFUGAL SWITCH PLATE (M1106)
15	XPS22	PHLP HD SCR 10-24 X 5/8
16	XM1104016	LEFT INNER WHEEL GUARD (M1104)
	XM1105016	LEFT INNER WHEEL GUARD (M1105)
	XM1106016	LEFT INNER WHEEL GUARD (M1106)
17	XM1104017	RIGHT INNER WHEEL GUARD (M1104)
	XM1105017	RIGHT INNER WHEEL GUARD (M1105)
	XM1106017	RIGHT INNER WHEEL GUARD (M1106)
18	XPS04	PHLP HD SCR 1/4-20 X 1/2
19	XM1104019	1/2" WHEEL FLANGE (M1104)
	XM1105019	5/8" WHEEL FLANGE (M1105)
	XM1106019	1" WHEEL FLANGE (M1106)
20	XM1104020	1/2" BORE A36 GRINDING WHEEL (M1104)
	XM1105020	5/8" BORE A36 GRINDING WHEEL (M1105)
	XM1106020	1" BORE A36 GRINDING WHEEL (M1106)
21	XM1104021	1/2" BORE A60 GRINDING WHEEL (M1104)
	XM1105021	5/8" BORE A60 GRINDING WHEEL (M1105)
	XM1106021	1" BORE A60 GRINDING WHEEL (M1106)
22	XM1104022	LEFT 1/2" ARBOR NUT (M1104)
	XM1105022	LEFT 5/8" ARBOR NUT (M1105)
	XM1106022	LEFT 1" ARBOR NUT (M1106)

REF	PART #	DESCRIPTION
23	XM1104023	RIGHT 1/2" ARBOR NUT (M1104)
	XM1105023	RIGHT 5/8" ARBOR NUT (M1105)
	XM1106023	RIGHT 1" ARBOR NUT (M1106)
24	XM1104024	RIGHT OUTER WHEEL GUARD (M1104)
	XM1105024	RIGHT OUTER WHEEL GUARD (M1105)
	XM1106024	RIGHT OUTER WHEEL GUARD (M1106)
25	XM1104025	LEFT OUTER WHEEL GUARD (M1104)
	XM1105025	LEFT OUTER WHEEL GUARD (M1105)
	XM1106025	LEFT OUTER WHEEL GUARD (M1106)
26	XPS04	PHLP HD SCR 1/4-20 X 1/2
27	XM1104027	LEFT TOOL REST (M1104)
	XM1105027	LEFT TOOL REST (M1105)
	XM1106027	LEFT TOOL REST (M1106)
28	XM1104028	RIGHT TOOL REST (M1104)
	XM1105028	RIGHT TOOL REST (M1105)
	XM1106028	RIGHT TOOL REST (M1106)
29	XPW07	FLAT WASHER 5/16
30	XPB07	HEX BOLT 5/16-18 X 3/4
31	XM1104031	STRAIN RELIEF
32	XM1104032	WIRE PLATE
33	XPS18	PHLP HD SCR 10-24 X 1/4
34	XPC100	CAPACITOR 100MFD 125V (M1104)
	XPC200	CAPACITOR 200MFD 125V (M1105)
	XPC300S	CAPACITOR 300MFD 125V (M1106)
35	XM1104035	FIXTURE CLIP (M1104/M1105)
	XM1106035	FIXTURE CLIP (M1106)
36	XM1104036	CAPACITOR CAP (M1104/M1105)
	XM1106036	CAPACITOR CAP (M1106)
37	XM1104037	POWER CORD 110V
38	XPS18	PHLP HD SCR 10-24 X 1/4
39	XM1104039	COPPER WASHER 5MM
40	XPLW01M	LOCK WASHER 5MM
41	XM1104041	ROCKER SWITCH (M1104)
	XM1105041	TOGGLE SWITCH RF-1001 (M1105/M1106)
42	XM1104042	SWITCH PLATE (M1104)
	XM1105042	SWITCH PLATE (M1105/M1106)
43	XM1104043	BASE PLATE (M1104)
	XM1105043	BASE PLATE (M1105)
	XM1106043	BASE PLATE (M1106)
44	XM1104044	RUBBER FOOT (M1104)
	XM1105044	RUBBER FOOT (M1105)
	XM1106044	RUBBER FOOT (M1106)
45	XM1104045	ARROW LABEL
46	XM1104046	RIGHT SPARK ARRSTR (M1104/M1105)
	XM1106046	RIGHT SPARK ARRSTR (M1106)
47	XM1104047	LEFT SPARK ARRSTR (M1104/M1105)
	XM1106047	LEFT SPARK ARRSTR (M1106)
48	XM1104048	RIGHT BRACKET (M1104/M1105)
	XM1106048	RIGHT BRACKET (M1106)
49	XM1104049	LEFT BRACKET (M1104/M1105)
	XM1106049	LEFT BRACKET (M1106)



REF	PART #	DESCRIPTION
50	XM1104050	EYESHIELD (M1104)
	XM1105050	EYESHIELD (M1105)
	XM1106050	EYESHIELD (M1106)
51	XM1104051	NUTPLATE
52	XPB51	HEX BOLT 1/4-20 X 3/8
53	XPS18	PHLP HD SCR 10-24 X 1/4 (M1104/M1105)
	XPS04	PHLP HD SCR 1/4-20 X 1/2 (M1106)
54	XM1104054	FEMALE KNOB 1/4-20

REF	PART #	DESCRIPTION
55	XPS06	PHLP HD SCR 10-24 X 3/8
56	XPLW02	LOCK WASHER 1/4
57	XPS04	PHLP HD SCR 1/4-20 X 1/2
59	XM1104059	DATA/WARNING LABEL (M1104)
	XM1105059	DATA/WARNING LABEL (M1105)
	XM1106059	DATA/WARNING LABEL (M1106)
60	XPW02M	FLAT WASHER 5MM (M1104/1105)
	XPW06	FLAT WASHER 1/4 (M1106)

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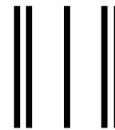
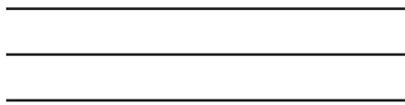
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