WOODSTOCK

SHOP FOX®

INTERNATIONAL

MODEL W1871

6" PORTABLE BENCH GRINDER w/LED LIGHTS

OWNER'S MANUAL

(FOR MODELS MANUFACTURED SINCE 05/19)

Phone: (360) 734-3482 • Online Technical Support: techsupport@woodstockint.com

#20270RSKBAL Printed in China

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

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

The owner of this machine/tool 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, cutting/sanding/grinding tool 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

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

INTRODUCTION

Woodstock Technical Support

This machine 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 Ext. 2 or send e-mail to: **techsupport@woodstockint.com**. 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.woodstockint.com/manuals**.
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
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MACHINE SPECIFICATIONS

MODEL W1871
6" PORTABLE BENCH GRINDER w/LED LIGHTS

Product Dimensions

Weight	16 lbs.
Width (side-to-side) x Depth (front-to-back) x Height	12 x 11 x 13-1/2 in.
Footprint (Length x Width)	7 x 7 in.

Shipping Dimensions

Type	Cardboard
Content	Machine
Weight	19 lbs.
Length x Width x Height	15 x 10 x 11 in.

Electrical

Power Requirement	120V, Single-Phase, 60 Hz
Full-Load Current Rating	2.5A
Minimum Circuit Size	15A
Connection Type	Cord & Plug
Power Cord Length	6 ft.
Power Cord Gauge	18 AWG
Included Plug Type	5-15
Switch Type	Rocker

Motors:

Main

Horsepower	1/3 HP
Phase	Single-Phase
Amps	2.5A
Speed	3450 RPM
Type	Permanent Split Capacitor
Bearings	Shielded & Permanently Lubricated

Main Specifications:

Operation Information

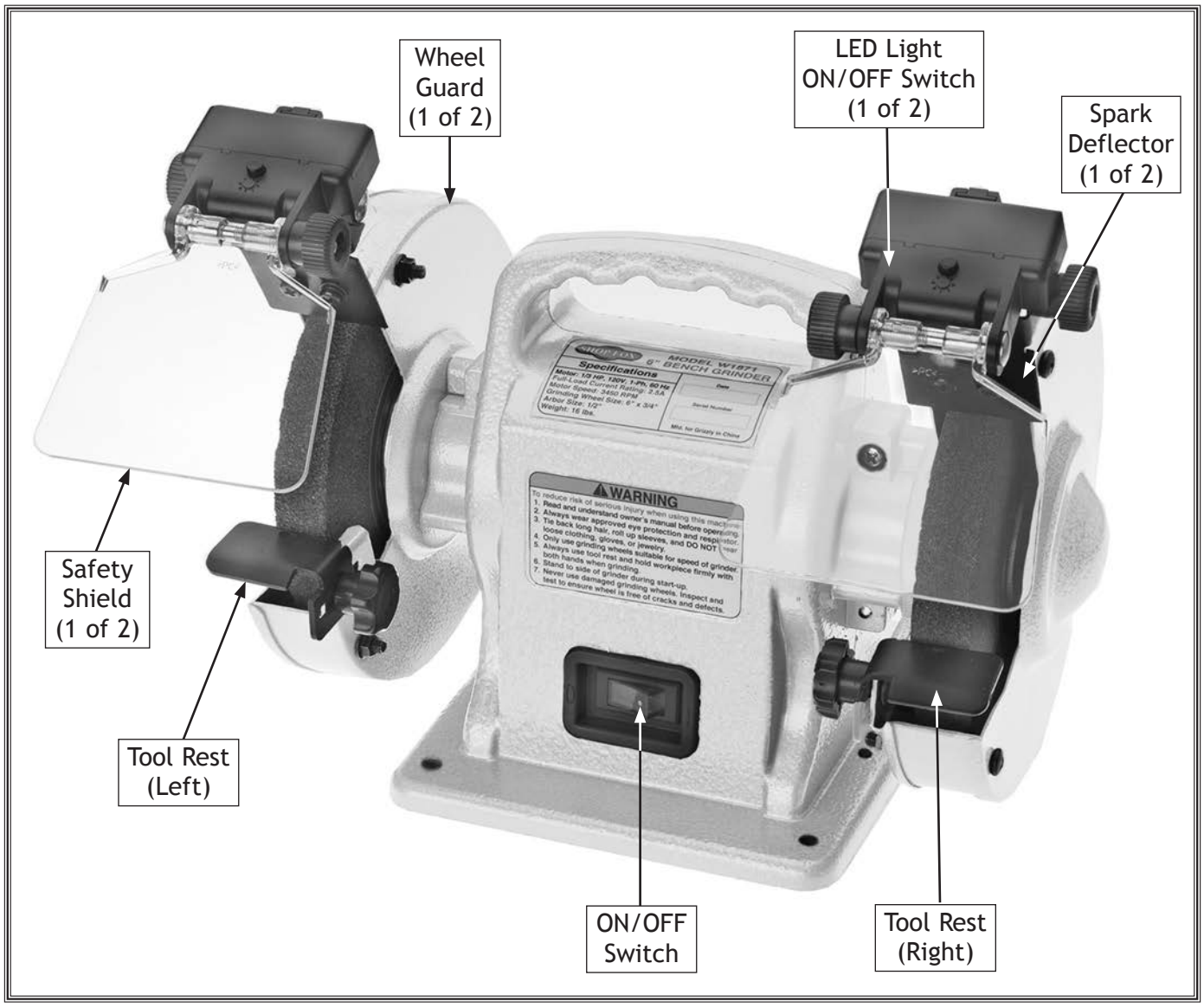
Wheel Type	Type-1
Right Wheel Grit	60-Grit
Left Wheel Grit	36-Grit
Wheel Material	Aluminum Oxide
Wheel Diameter	6 in.
Wheel Thickness	3/4 in.
Spindle Diameter	1/2 in.
Work Rest	Yes

Construction

Base	Cast Aluminum
Work Rest	Steel
Lamp	LED

Identification

Become familiar with the names and locations of the controls and features shown below to better understand the instructions in this manual.



⚠WARNING

To reduce your risk of serious injury or damage to the machine, read this entire manual BEFORE using machine.

Controls & Components

Refer to **Figures 1-2** and the following descriptions to become familiar with the basic controls and components of this machine. Understanding these items and how they work will help you understand the rest of the manual and stay safe when operating this machine.

Control or Component Description

A. Wheel Guard: Prevents accidental contact with grinding wheel, and contains sparks during grinding.

B. Spark Deflector: Reduces amount of sparks spraying back towards the operator.

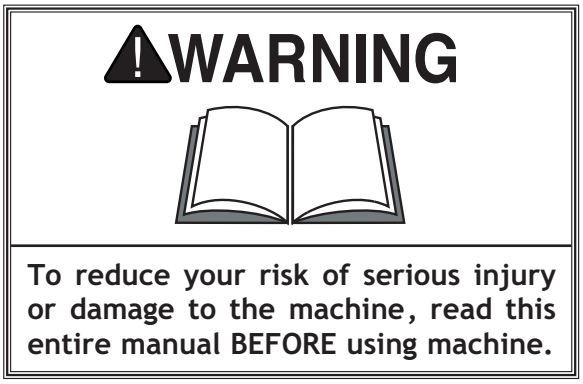
C. Tool Rest Lock Knob: Locks tool rest into position.

D. LED Light ON/OFF Switch: Turns work lamp ***ON*** and ***OFF***.

E. Safety Shield: Acts as a protective barrier against sparks during grinding operations. This shield is not a substitute for personal protective equipment.

F. Tool Rest: Provides flat surface to rest workpiece on during operations.

G. ON/OFF Switch: Turns machine ***ON*** and ***OFF***.



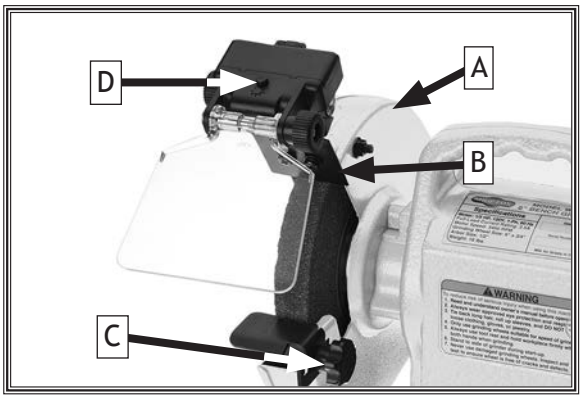


Figure 1. Safety and lighting components.

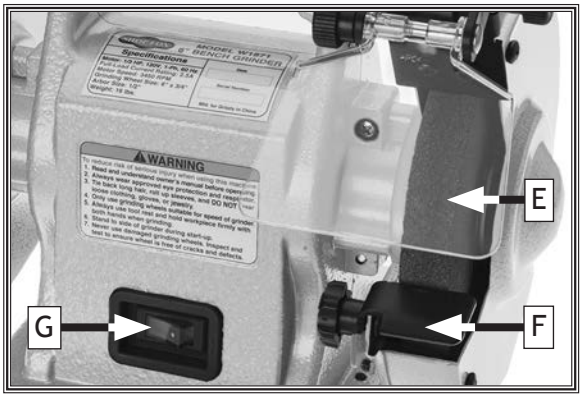


Figure 2. Safety and electrical components.

SAFETY

For Your Own Safety, Read Manual Before Operating 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—this responsibility is ultimately up to the operator!

⚠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 or a situation that may cause damage to the machinery.**

Standard Machinery Safety Instructions

OWNER'S MANUAL. Read and understand this owner's manual BEFORE using machine.

TRAINED OPERATORS ONLY. Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

MENTAL ALERTNESS REQUIRED. Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

ELECTRICAL EQUIPMENT INJURY RISKS. You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow an electrician or qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

DISCONNECT POWER FIRST. Always disconnect machine from power supply BEFORE making adjustments, changing tooling, or servicing machine. This eliminates the risk of injury from unintended startup or contact with live electrical components.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are not approved safety glasses.

WEARING PROPER APPAREL. Do not wear clothing, apparel, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips, which could cause loss of workpiece control.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

INTENDED USAGE. Only use machine for its intended purpose—never make modifications without prior approval from Woodstock International. Modifying machine or using it differently than intended will void the warranty and may result in malfunction or mechanical failure that leads to serious personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris—make sure they are properly installed, undamaged, and working correctly.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine ***OFF*** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

CHECK DAMAGED PARTS. Regularly inspect machine for any condition that may affect safe operation. Immediately repair or replace damaged or mis-adjusted parts before operating machine.

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside, resulting in a short. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact Technical Support at (360) 734-3482.

Additional Safety for Bench Grinders

Serious injury or death can occur from impact injuries if grinding wheel breaks apart during use. Entanglement/amputation injuries can occur from being caught in moving parts or in-running pinch points. Flying sparks can ignite explosive or flammable materials. Rotating grinding wheels can easily remove skin. To minimize risk of getting hurt or killed, anyone operating machine MUST completely heed hazards and warnings below.

SAFE MOUNTING & WORK AREA. An unsecured grinder may become dangerously out of control during operation. Before use, verify grinder is FIRMLY secured in a location free of explosive or flammable materials.

STARTING GRINDER. If a wheel is damaged, it will usually fly apart shortly after start-up. To protect yourself, always stand to side of grinder when turning it ***ON*** and allow it to run for at least one minute before standing in front of it.

VISUAL INSPECTION. Verify that grinding wheels are free of cracks, chips, or dents in wheel surface before installing. Do not use wheel if it has any of these problems or it could break apart during operation.

RING TEST. Perform a "ring test" on grinding wheels before installation to ensure they are safe to use. A wheel that does NOT pass ring test may break or fly apart during operation.

WHEEL SPEED RATING. Wheels operated at a faster speed than rated for may break apart during operation. Before mounting a new wheel, be sure wheel RPM rating is equal to or higher than speed of grinder. Never use unmarked wheels or wheels rated for a lower speed than grinder.

VIBRATING WHEEL. Never use a wheel that vibrates. Replace wheel or shaft bearings immediately.

SPARK DEFLECTOR GAP. Keep gap between end of spark deflector and grinding wheel between 1/8" and 1/4". If the gap is larger, pinch hazard increases and excessive sparks/abrasives can be expelled toward the operator.

SPINDLE NUT. Only tighten wheel spindle nut enough to drive wheel and prevent slippage.

EYE SHIELDS. Place eye shields close to grinding wheel and re-adjust as wheel wears down.

TOOL REST POSITION. If tool rest is too far away from wheel, workpiece may be pulled down, causing loss of control and pulling your hand into grinding wheel. Keep tool rest within 1/8" from wheel when operating. Replace grinding wheel when tool rest gap is wider than 1/8" and no additional adjustment can be made.

HAND & WHEEL CONTACT. Keep a firm grip on workpiece and position your hands a safe distance away when grinding. Anticipate when workpiece will heat up, and cool it before it becomes too hot to hold, or use an appropriate clamp. Avoid wearing gloves as they may get caught in grinding wheel and cause even more serious entanglement injuries.

WHEEL FLANGES. Only use flanges included with grinder when mounting wheels. Other flanges may not properly secure wheel and cause an accident. Do not use warped or damaged flanges, and always use paper discs (blotters) between wheels and flanges to reduce risk of flanges cracking wheel when tightened.

EYE, FACE, & LUNG PROTECTION. Grinding ejects small particles at a high rate of speed. These particles can cause blindness, skin injuries, or respiratory damage. ALWAYS wear approved clothing, safety goggles, face shield, and a respirator for type of grinding to be done.

SIDE & TOP GRINDING. Grinding on side of wheels can cause them to crack and burst—unless wheel is rated for side grinding. Grinding on top of wheels greatly increases risk of workpiece kickback. Always grind on downward part of wheel.

ELECTRICAL

Circuit Requirements

This machine must be connected to the correct size and type of power supply circuit, or fire or electrical damage may occur. Read through this section to determine if an adequate power supply circuit is available. If a correct circuit is not available, a qualified electrician MUST install one before you can connect the machine to power.

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

Full-Load Current Rating

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

Full-Load Current Rating at 120V ..... 2.5 Amps

Circuit Requirements for 120V

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

Circuit Type ..... 120V, 60 Hz, Single-Phase
Circuit Size ..... 15 Amps
Plug/Receptacle ..... NEMA 5-15

⚠WARNING

The machine must be properly set up before it is safe to operate. DO NOT connect this machine to the power source until instrtucted to do so later in this manual.

⚠WARNING

Incorrectly wiring or grounding this machine can cause electrocution, fire, or machine damage. To reduce this risk, only an electrician or qualified service personnel should do any required electrical work on this machine.

NOTICE

The circuit requirements listed in this manual apply to a dedicated circuit—where only one machine will be running at a time. If this machine will be connected to a shared circuit where multiple machines will be running at the same time, consult with an electrician to ensure that the circuit is properly sized for safe operation.

Grounding Requirements

This machine MUST be grounded. In the event of certain types of malfunctions or breakdowns, grounding provides a path of least resistance for electric current to travel—in order to reduce the risk of electric shock.

Improper connection of the equipment-grounding wire will increase the risk of electric shock. The wire with green insulation (with/without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

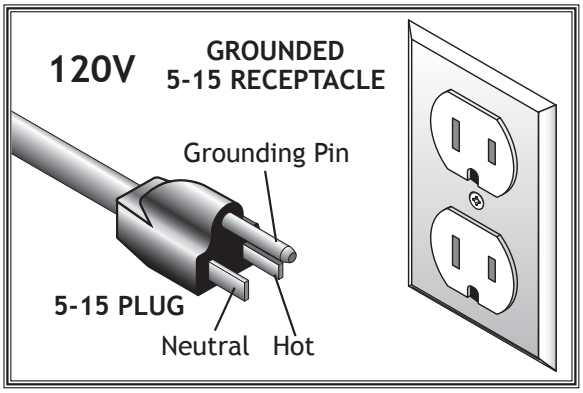
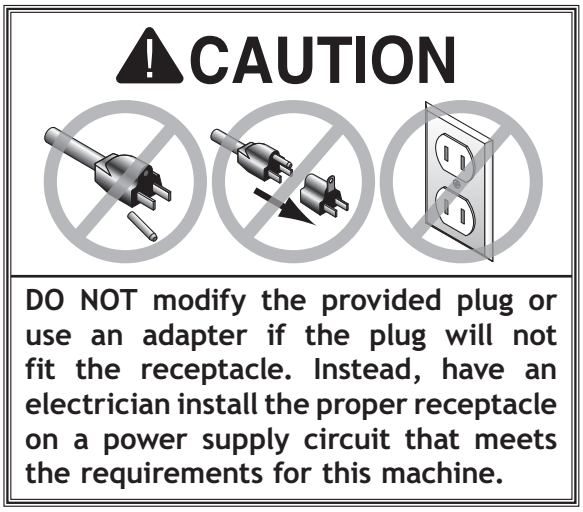


Figure 3. NEMA 5-15 plug & receptacle.



DO NOT modify the provided plug or use an adapter if the plug will not fit the receptacle. Instead, have an electrician install the proper receptacle on a power supply circuit that meets the requirements for this machine.

For 120V Connection

This machine is equipped with a power cord with an equipment-grounding wire and NEMA 5-15 grounding plug (see figure). The plug must only be inserted into a matching receptacle that is properly installed and grounded in accordance with local codes and ordinances.

Extension Cords

We do not recommend using an extension cord with this machine. Extension cords cause voltage drop, which may damage electrical components and shorten motor life. Voltage drop increases with longer extension cords and smaller gauge sizes (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

Minimum Gauge Size at 120V ..... 16 AWG
Maximum Length (Shorter is Better) ..... 50 ft.

SETUP

Unpacking

This machine has been carefully packaged for safe transportation. If you notice the machine has been damaged during shipping, please contact your authorized Shop Fox dealer immediately.

⚠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 during entire setup process!

Items Needed for Setup

The following items are needed, but not included, to set up your machine.

Description	Qty
Safety Glasses for Each Person	1 Pair
Mounting Hardware (**Page 12**)	As Needed
Ruler 12"	1
Phillips Screwdriver #2	1

Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

Note: *If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.*

Box 1 (Figure 4)	Qty
A. Grinder (Not Shown)	1
B. LED Light Housings w/Spark Deflectors	2
C. Safety Shields	2
D. Tool Rest (Left)	1
E. Tool Rest (Right)	1

Bagged Inventory (Figure 5)	Qty
F. AAA Batteries	4
G. Knobs M6-1 6-Lobe	2
H. Flat Washers 6mm	2
I. Carriage Bolts M6-1 x 12	2
J. Phillips Head Screws M5-.8 x 10 w/Washers	4

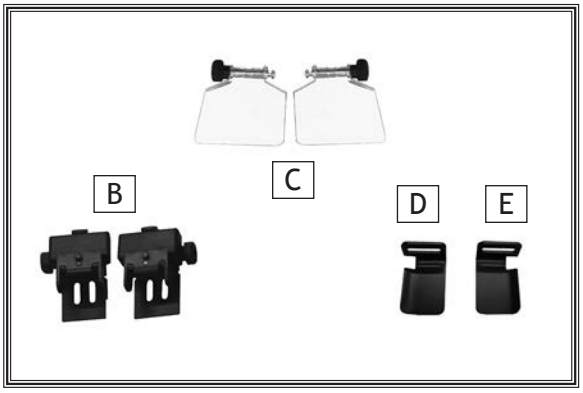


Figure 4. Tool rest and safety shield parts.

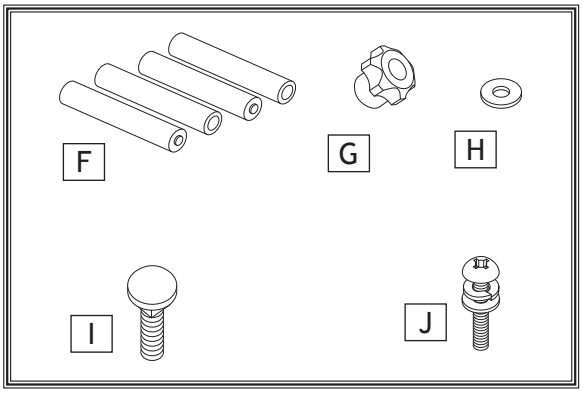


Figure 5. W1871 bagged inventory.

Machine Placement

Workbench Load

Refer to the **Machine Specifications** for the weight and footprint specifications of your machine. Some workbenches may require additional reinforcement to support the weight of the machine and workpiece materials.

Placement Location

Consider anticipated workpiece sizes and additional space needed for auxiliary stands, work tables, or other machinery when establishing a location for this machine in the shop. Below is the minimum amount of space needed for the machine.

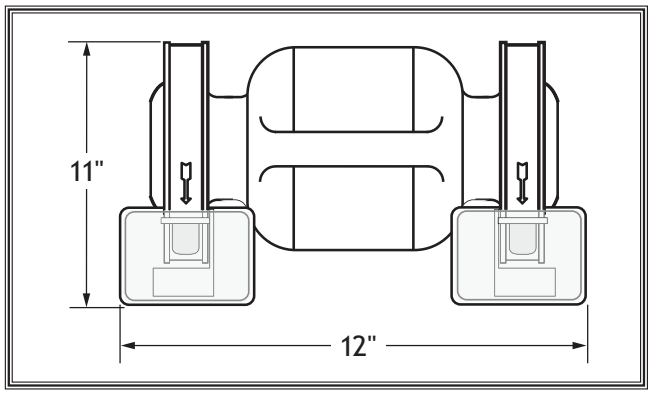


Figure 6. Working clearances.

⚠CAUTION

INJURY HAZARD! Untrained users can injure themselves with this machine. Restrict access to machine when you are away, especially if it is installed where children are present.

Bench Mounting

Number of Mounting Holes..... 4
Diameter of Mounting Hardware Needed...1/4"

The base of this machine has mounting holes that allow it to be fastened to a workbench or other mounting surface to prevent it from moving during operation and causing accidental injury or damage.

The strongest mounting option is a "Through Mount" (see example) where holes are drilled all the way through the workbench—and hex bolts, washers, and hex nuts are used to secure the machine in place.

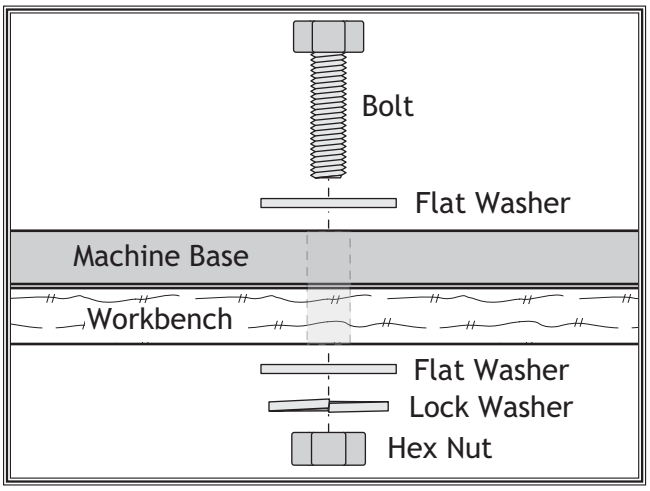


Figure 7. Typical "Through Mount" setup.

Another option is a "Direct Mount" (see example) where the machine is secured directly to the workbench with lag screws and washers.

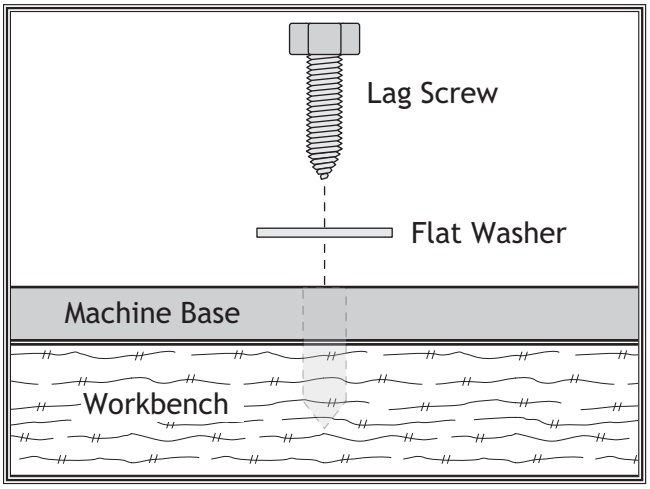


Figure 8. Typical "Direct Mount" setup.

Assembly

Before beginning the assembly process, refer to **Items Needed for Setup** and gather everything you need. Ensure all parts have been properly cleaned of any heavy-duty rust-preventative applied at the factory (if applicable). Be sure to complete all steps in the assembly procedure prior to performing the **Test Run** or connecting the machine to power.

The Model W1871 comes mostly assembled from the factory. Using the hardware from the **Inventory** list on **Page 11**, complete the assembly by attaching the LED light housings, safety shields, and tool rests.

To assemble machine, do these steps:

1. Remove battery cover from each LED light housing and install (2) AAA batteries in each (see **Figure 9**).

2. Attach (1) safety shield to each LED light housing using (1) pre-attached M5-.8 x 55 carriage bolt and (1) M5-.8 round knob (see **Figure 9).**

3. Attach each assembled LED light housing/ safety shield to top of wheel guard with (2) M5-.8 x 10 Phillips head screws with captive washers (see **Figure 10**).

4. Attach each tool rest to bottom of wheel guard using (1) M6-1 x 12 carriage bolt, (1) 6mm flat washer, and (1) M6-1 6-lobe knob, as shown in **Figure 11**.

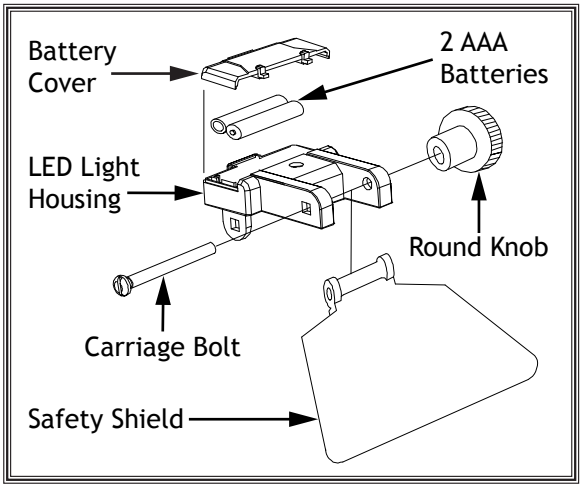


Figure 9. LED light housing and safety shield components.

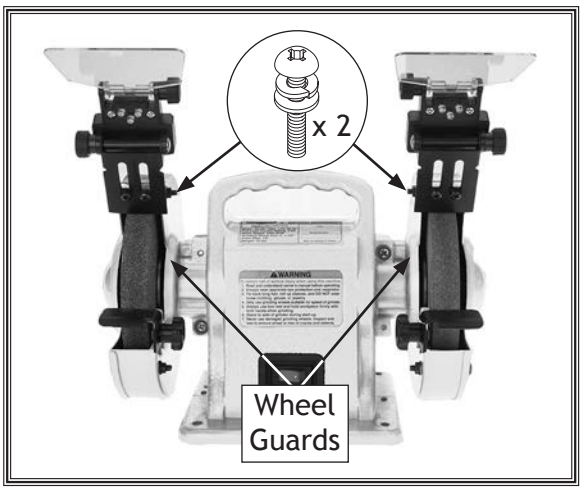


Figure 10. LED light housings and safety shields attached to wheel guards.

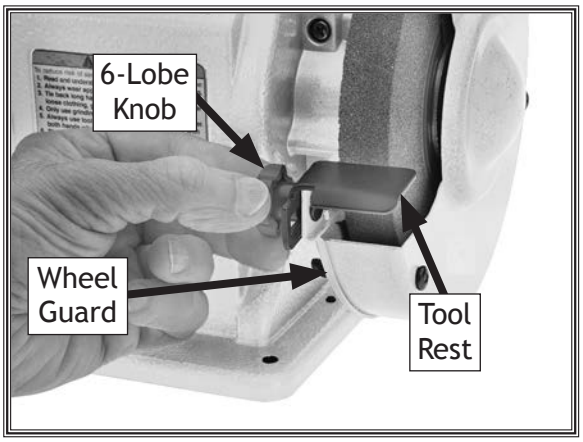


Figure 11. Attaching right tool rest to wheel guard.

SETUP

Tool Rest Adjustment

The tool rest stabilizes the workpiece when grinding. It must always be positioned correctly when using the grinder, to avoid workpiece and possibly operator's hands from being pulled into grinding wheel.

DISCONNECT POWER BEFORE MAKING ADJUSTMENTS!

As the grinding wheel wears, adjust the tool rest closer to the grinding wheel to maintain a gap of 1/16" – 1/8" (see **Figure 12**). If the gap reaches 1/8" and no additional adjustments can be made, replace the grinding wheel.

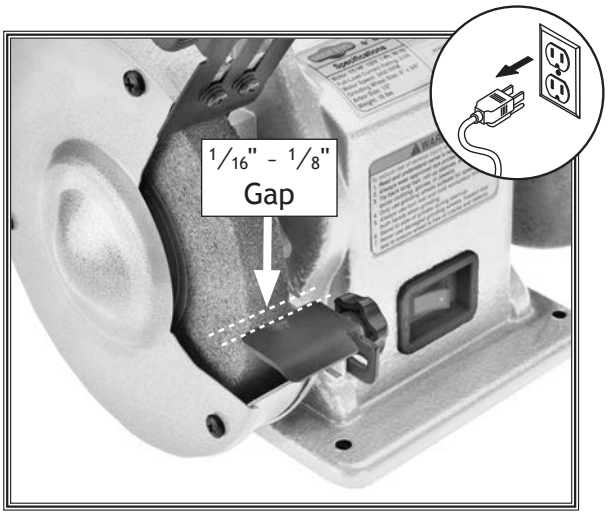


Figure 12. Proper gap between tool rest and grinding wheel.

⚠CAUTION

***NEVER* grind without tool rest in place and properly positioned. "Free hand" grinding or too large of a gap between wheel and tool rest increases risk of kickback, which may lead to serious injury.**

Spark Deflector Adjustment

The spark deflector prevents sparks from showering the top of the workpiece and the operator's hands.

DISCONNECT POWER BEFORE MAKING ADJUSTMENTS!

As the wheel wears, adjust the spark deflector closer to the grinding wheel to maintain a gap of 1/8" – 1/4" (see **Figure 13**). If the gap reaches 1/4" and no additional adjustments can be made, replace the grinding wheel.

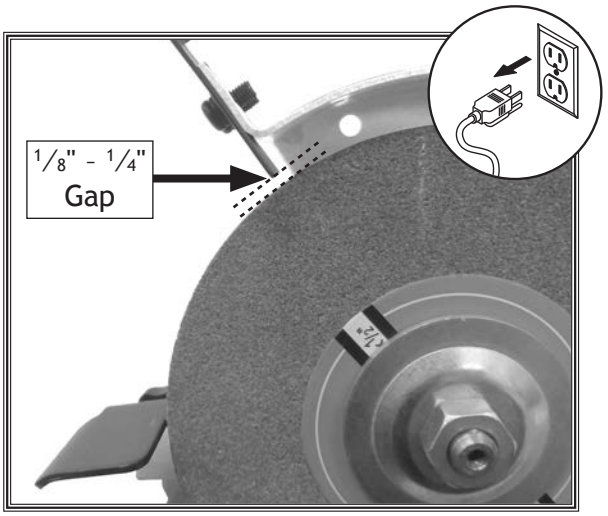


Figure 13. Proper gap between spark deflector and grinding wheel.

NOTICE

Some grinding wheels must be replaced before spark deflector or tool rest reach their final adjustment. As diameter of a grinding wheel is reduced, so is available surface speed. Grinding under these conditions can lead to faster abrasive loss and poor grinding results. Always follow wheel manufacturer's directions.

Test Run

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

If you find an unusual problem during the test run, immediately stop the machine, disconnect it from power, and fix the problem BEFORE operating the machine again. The **Troubleshooting** table in the **SERVICE** section of this manual can help.

The Test Run consists of verifying the following:
1) The motor powers up and runs correctly.

To test run machine, do these steps:

1. Clear all setup tools away from machine.

2. Connect machine to power supply.

3. Turn machine ***ON***, verify motor operation, and then turn machine ***OFF***.

   The motor should run smoothly and without problems or unusual noises.

WARNING

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

WARNING

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

OPERATIONS

Operation Overview

This machine will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. If at any time you are experiencing difficulties performing any operation, stop using the machine!

The overview below provides the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand. Due to its generic nature, this overview is **NOT** intended to be an instructional guide.

To complete a typical operation, the operator does the following:

1. Ensures workpiece is suitable for grinding.

2. Selects correct grinding wheel for operation, inspects wheel, performs "ring test," and installs wheel.

3. Verifies/adjusts tool rest position so gap is perpendicular to and 1/16" – 1/8" from grinding wheel, and verifies/adjusts spark deflector so wheel gap is between 1/8" – 1/4".

4. Positions safety shield for safe grinding.

5. Ensures that ON/OFF switch is in OFF position, then connects grinder to power.

6. Puts on personal protective equipment.

7. Stands aside, starts grinder, and allows it to reach full speed and operate for at least 1 minute to ensure grinding wheel does not fly apart from the centrifugal force of rotation.

8. Positions workpiece on tool rest for grinding.

9. Gradually feeds workpiece into wheel, then moves workpiece left to right to prevent grooves in wheel.

WARNING

To reduce your risk of serious injury or damage to the machine, read this entire manual BEFORE using machine.

WARNING

To reduce the risk of eye injury and long-term respiratory damage, always wear safety glasses and a respirator while operating this machine.

WARNING

Electrical system is not waterproof. DO NOT use grinder with liquid cooling system for wet grinding. Ignoring warning can lead to electrocution or machine damage.

NOTICE

If you are an inexperienced operator, we strongly recommend that you read books or trade articles, or seek training from an experienced operator of this type of machinery before performing unfamiliar operations. Above all, safety must come first!

10. Quenches workpiece as required to prevent surface hardening or temper loss.

11. Stops bench grinder.

Workpiece Inspection

Some workpieces are not suitable for grinding on a bench grinder. **Before grinding, inspect all workpieces for the following:**

Hard Workpiece

Workpieces that are made of stone, carbide, stainless steel, ceramics, glass, or have hardened welds will wear out most general-grade grinding wheels quickly. If hard materials are to be ground, you must install the correct type of grinding wheel.

Soft Workpiece

Workpieces that are made of aluminum, brass, lead, and other nonferrous metals will load up in the grinding wheel and render the abrasive useless. Grinding wood, plastics, rubber, fiberglass, or other soft materials can also cause the same problem and lead to the wheel overheating and possibly bursting during use if ignored. To restore a loaded grinding wheel surface, redress with a dressing tool.

Flexible/Unstable Workpiece

Grinding on the side or the ends of cable, chain, or round workpieces creates the hazard of workpiece twist or grab, leading to entanglement with the wheel or shaft. This hazard must be avoided.

Loose Parts

Make sure that the workpiece is free of any parts like springs, pins, balls, or other components that may loosen or dislodge during grinding, and hit the operator.

Strength

Make sure that the workpiece is strong enough to be ground. Should it break, the broken piece may dig into the wheel and cause kickback or severe injury.

Wheel Selection

The Model W1871 only accepts Type-1 wheels with a 1/2" bore.

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	Abrasive Type	Grit Size	Grade	Bond Type
1	A	60	L	V

The **Prefix** is the manufacturer's designation for a particular wheel type (e.g. Type-1 wheels).

The most common **Abrasive Types** used are A for Aluminum Oxide, C for Silicon Carbide, and occasionally SG for Seeded Gel.

The **Grit Size** is a number that refers to the size of the abrasive grain in the wheel. The lower the number, the coarser the wheel. Ten 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—"A" is softest and "Z" is 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. Vitrified Clay provides high strength and good porosity. The other common bond type is "B" for resin where synthetic resins are used. These are used to grind cemented carbide and ceramic materials.

Note: *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.*

Wheel Inspection

Before mounting a new grinding wheel, it must be inspected. Do not assume that a wheel is in sound condition just because it is new. Often, damage can occur in shipping, with age, or with exposure to moisture.

First, do a **Visual Inspection**. Look for any cracks, chips, nicks, or dents in the surface of the wheel. If you see any of these, DO NOT use the wheel.

Second, do a **Ring Test**. This test will give you an indication of any internal damage that may not be obvious during a visual inspection.

To perform ring test, do these steps:

1. Make sure grinding wheel is clean and dry; otherwise, you may get false results.

2. Hang wheel in air with a piece of cord or string looped through mounting hole in center.

3. At spots shown in **Figure 14**, gently tap grinding wheel with a light non-metallic device such as handle of a screwdriver or a wooden mallet.

   Note: *Finding exact spot to tap may take several attempts.*

4. An undamaged grinding wheel will emit a clear metallic ring or "ping" sound in each of these spots. A damaged grinding wheel will respond with a dull thud that has no clear tone.

   — If you determine from the ring test that a grinding wheel is damaged, DO NOT use it!

⚠CAUTION

Warped wheel flanges can increase risk of grinding wheel breaking and flying apart. Never use warped wheel flanges. Always check flanges for flatness before installing grinding wheel.

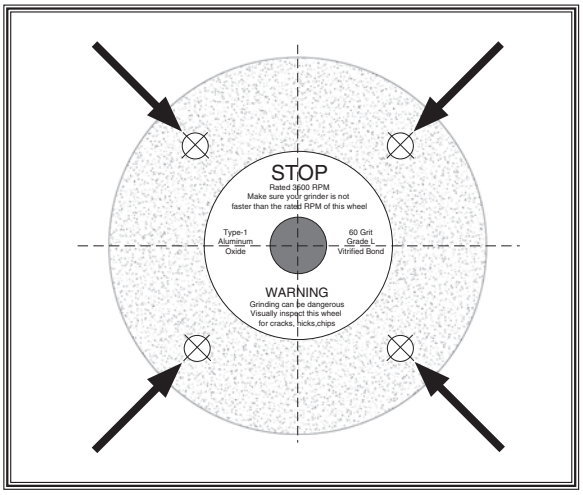


Figure 14. Tapping locations when performing a ring test.

OPERATIONS

Wheel Care

When grinding, your safety depends, to a large degree, on the condition of the wheel. A wheel in poor condition could break apart during rotation and injure the operator and others in the area.

Here are some tips to help you avoid breaking the wheel:

- Always transport, store and handle wheels with care. Wheels may be damaged if they are dropped or if heavy objects are stacked on them.
- Select the right grinding wheel for the job. DO NOT grind material inappropriate for the wheel type.
- Only use wheels that are rated for the RPM of the grinder.
- Mount the wheel properly (see **Wheel Removal & Installation** on **Page 20**).
- Do not push the workpiece into the grinding wheel with such force that it causes the grinder to bog down. And do not apply pressure to stop the wheel after turning the grinder ***OFF***.
- Dress the wheel when necessary. Do not allow it to become glazed (see **Wheel Dressing** on **Page 20**).
- Do not store wheels in damp or wet locations.
- Do not overtighten the arbor nut when mounting the wheel (see **Figure 15**).

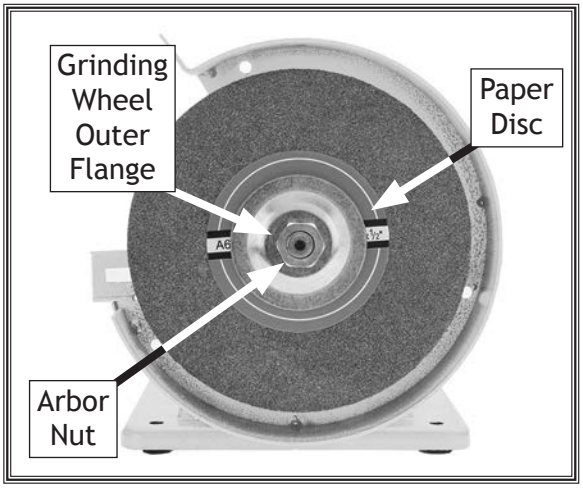


Figure 15. Arbor nut location.

Wheel Dressing

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 (see **Accessories** on **Page 22** for an example). Dressing restores the abrasive quality of the wheel surface and brings the wheel edge back to square.

Refer to the instructions that accompany your dressing accessory for complete details on how to properly dress the wheel.

To dress grinding wheel, do these steps:

1. Turn grinder ***ON***.
2. Place wheel dresser on tool rest with spurred wheels facing toward grinding wheel.
3. Slowly move dressing wheel toward grinding wheel and maintain slight pressure until a clear, even grinding surface appears across face of wheel.
4. Turn grinder ***OFF***.

⚠CAUTION

Always adjust the tool rest and spark deflector after dressing or replacing the grinding wheel. Failure to do so could lead to workpiece kickback and injury.

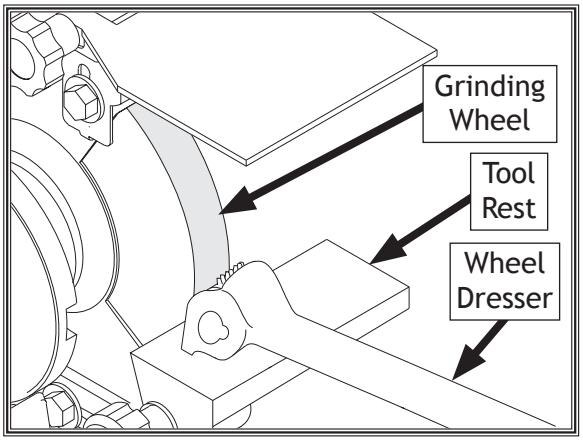


Figure 16. Example of dressing grinder wheel.

Wheel Removal & Installation

Items Needed	Qty
Wrench or Socket 8mm	1
Phillips Screwdriver #2	1
Wrench or Socket 19mm	1

To remove and install grinding wheel, do these steps:

1. DISCONNECT MACHINE FROM POWER!
2. Remove outer guard by removing (3) Phillips head screws and (3) flange nuts (see **Figure 17**).

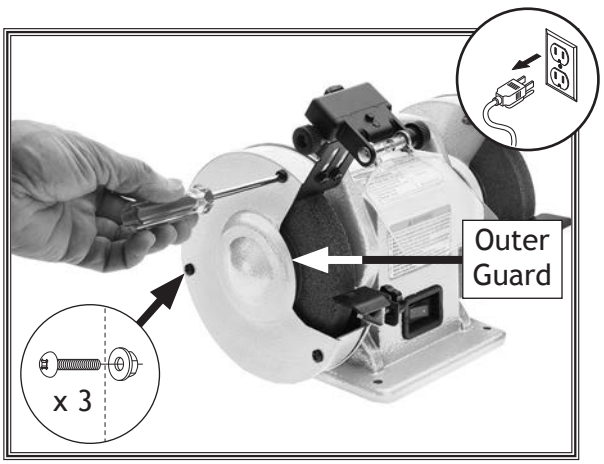


Figure 17. Location of outer guard hardware that must be removed when removing wheel.

3. Remove arbor nut (see **Figure 18**).

Tip: *Hold grinding wheel with free hand to stop it from turning while loosening the arbor nut.*

Note: *Nut on left side of grinder has left-hand threads. Turn it clockwise to loosen.*

4. Remove grinding wheel outer flange and paper disc.

5. Remove grinding wheel from spindle. Take note of paper or fiber disc between wheel flanges and wheel (see **Figure 19**). These cushion the pressure of the wheel flanges and help distribute pressure more evenly. They also help reduce damage to the flanges.

6. Verify flatness of inner and outer flanges by placing them on a flat surface. If either flange is warped or damaged, replace it.

7. Mount new grinding wheel, as shown in **Figure 19**. Tighten arbor nut snugly but do not over-tighten to avoid stressing and cracking wheel.

8. Re-assemble outer wheel guard using hardware removed in **Step 2**.

9. While standing away from line of rotation, turn grinder ***ON*** and run new grinding wheel for at least 1–2 minutes before standing in front of it. This helps protect you if the wheel has internal damage that will cause it to fly apart from the centrifugal force of rotation.

— If grinder runs smoothly, grinding wheel may now be used.

— If wheel appears to wobble, grinder vibrates excessively, or any other unsafe condition appears with new wheel, stop grinder and refer to **Troubleshooting** on **Page 24**.

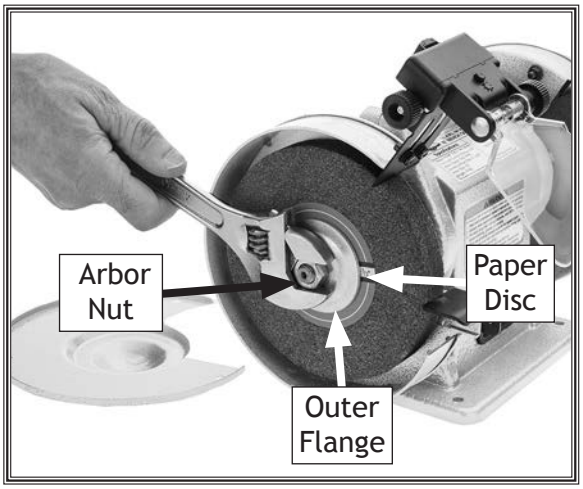


Figure 18. Removing grinding wheel.

⚠CAUTION

NEVER assemble grinding wheel on spindle without paper or fiber discs between wheel and flange. Not using discs can put stress on wheel, causing it to crack and possibly fly apart.

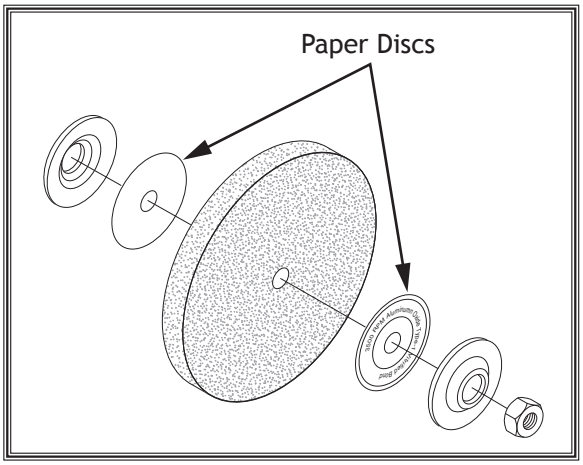


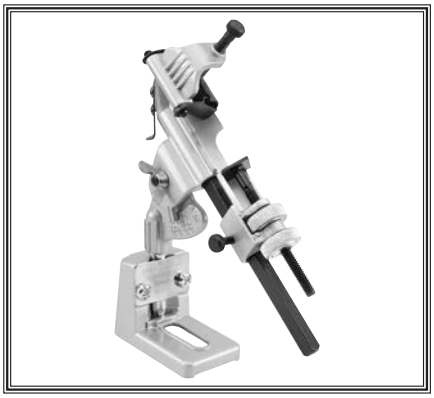
Figure 19. Assembly order for wheel installation.

ACCESSORIES

Grinder Accessories

The following grinder accessories may be available through your local Woodstock International Inc. Dealer. If you do not have a dealer in your area, these products are also available through online dealers. Please call or e-mail Woodstock International Inc. Customer Service to get a current listing of dealers at: 1-800-840-8420 or at sales@woodstockint.com.

The **D4144 Shop Fox Drill Sharpener** mounts next to your bench grinder and can sharpen drill bits from 1/8" to 3/4" with speed and accuracy. Adjustable for various drill-point angles.



The **D3302 Heavy-Duty Grinder Stand with Square Base** turns any bench grinder into a stationary work center. This stand has a square base with square column, adjustable rubber feet and measures 39" high.

The **D3744 STEELEX Diamond Dresser with Handle** features a 0.25 carat diamond tip for trueing abrasive grinding wheels fast and easy while exposing a fresh surface for efficient grinding operations. Simply guide the Diamond Dresser against the grinder's tool rest to restore the wheel back to its original condition. Overall length is 8 1/2" long with a 3 3/4" long handle. The industrial diamond measures 0.25 carat.

MAINTENANCE

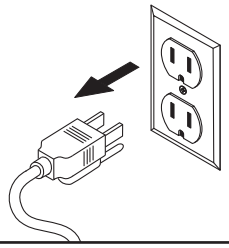
Schedule

For optimum performance from this machine, this maintenance schedule must be strictly followed.

Ongoing
To minimize your risk of injury and maintain proper machine operation, shut down the machine immediately if you ever observe any of the items below, and fix the problem before continuing operations:

- Loose mounting bolts.
- Cracked or loose grinding wheel.
- Worn or damaged wires.
- Any other unsafe condition.

⚠WARNING



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

Grinding Wheels

The grinding wheels should be inspected before every use. Use the ring test method noted in **Wheel Inspection** on **Page 18** to verify the structural integrity.

Cleaning & Protecting

Cleaning the grinder is relatively easy. Vacuum excess debris, and wipe off the remaining dust with a dry cloth.

Wheel Storage

Grinding wheels can be easily damaged, so it is important to store them properly. Follow all wheel manufacturer storage instructions. Always store grinding wheels in a location that is dry and protected from potential damage due to them being dropped or having other items dropped on them. Also, avoid storing grinding wheels where there is high humidity, extreme heat or cold, or solvents.

Wheel Dressing

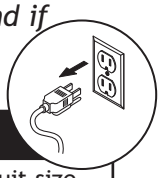
Depending on the type of grinding you do, the grinding wheel may require periodic dressing. Refer to the instructions that accompany your dressing accessory for complete details on how to properly dress a wheel (refer to **Page 20**).

SERVICE

Troubleshooting

The following troubleshooting tables cover common problems that may occur with this machine. If you need replacement parts or additional troubleshooting help, contact our Technical Support.

Note: *Before contacting Tech Support, find the machine serial number and manufacture date, and if available, your original purchase receipt. This information is required to properly assist you.*



PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Machine does not start, or power-supply fuse/breaker trips immediately after startup.	1. Incorrect power supply voltage or circuit size. 2. Power supply circuit breaker tripped or fuse blown. 3. ON/OFF switch at fault. 4. Motor at fault.	1. Ensure correct power supply voltage, circuit size. 2. Ensure circuit is sized correctly and free of shorts. Reset circuit breaker or replace fuse. 3. Replace switch. 4. Test/repair/replace.
Machine stalls or is underpowered.	1. Machine undersized for task. 2. Motor overheated. 3. Run capacitor at fault. 4. Motor bearings at fault. 5. Motor at fault.	1. Use new grinding/buffing wheel; reduce feed rate. 2. Clean motor, let cool, and reduce workload. 3. Test/repair/replace. 4. Test/repair/replace. 5. Test/repair/replace.
Machine has vibration or noisy operation.	1. Motor or component loose. 2. Machine incorrectly mounted to workbench or stand. 3. Grinding wheel at fault/arbor hole not round. 4. Motor bearings at fault. 5. Motor shaft bent.	1. Inspect/replace damaged parts, or tighten if loose. 2. Tighten mounting hardware. 3. Dress/replace grinding wheel. 4. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement. 5. Test with dial indicator and replace motor.
Machine slows when operating.	1. Operator applying too much pressure too quickly.	1. Slow down rate of movement of workpiece into wheel; use less pressure.
Wavy condition on surface of workpiece.	1. Machine vibrating. 2. Workpiece not being held firmly. 3. Wheel face uneven. 4. Wheel is too hard.	1. Ensure machine is securely mounted to a solid surface (**Page 12**). 2. Use a holding device to firmly retain workpiece. 3. Dress grinding wheel (**Page 20**). 4. Use softer wheel or reduce feed rate.
Lines on surface of workpiece.	1. Impurity on wheel surface. 2. Workpiece not being held tightly.	1. Dress grinding wheel (**Page 20**). 2. Use a holding device to firmly retain workpiece.
Burning spots or cracks in the workpiece.	1. Improper type of grinding wheel. 2. Improper feed rate. 3. Workpiece requires quenching.	1. Try a wheel with softer style or a coarser grit. 2. Slow down rate of movement of workpiece into wheel. 3. Quench workpiece in water to cool.
Wheel dulls quickly, grit falls off.	1. Operator applying too much pressure too quickly. 2. Wheel is too soft for material being ground 3. Wheel diameter too small. 4. Bad wheel dress. 5. Defective wheel bonding.	1. Slow down rate of movement of workpiece into wheel; use less pressure. 2. Select harder bond. 3. Replace grinding wheel (**Page 20**). 4. Re-dress grinding wheel (**Page 20**). 5. Replace grinding wheel. Consult manufacturer.

Electrical Safety Instructions

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

If there are differences between your machine and what is shown in this section, call Technical Support at (360) 734-3482 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** *Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.*

⚠WARNING

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

QUALIFIED ELECTRICIAN. Due to the inherent hazards of electricity, only a qualified electrician should perform wiring tasks on this machine. If you are not a qualified electrician, get help from one before attempting any kind of wiring job.

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

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

MODIFICATIONS. Using aftermarket parts or modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire.

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

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

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

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (360) 734-3482.

NOTICE

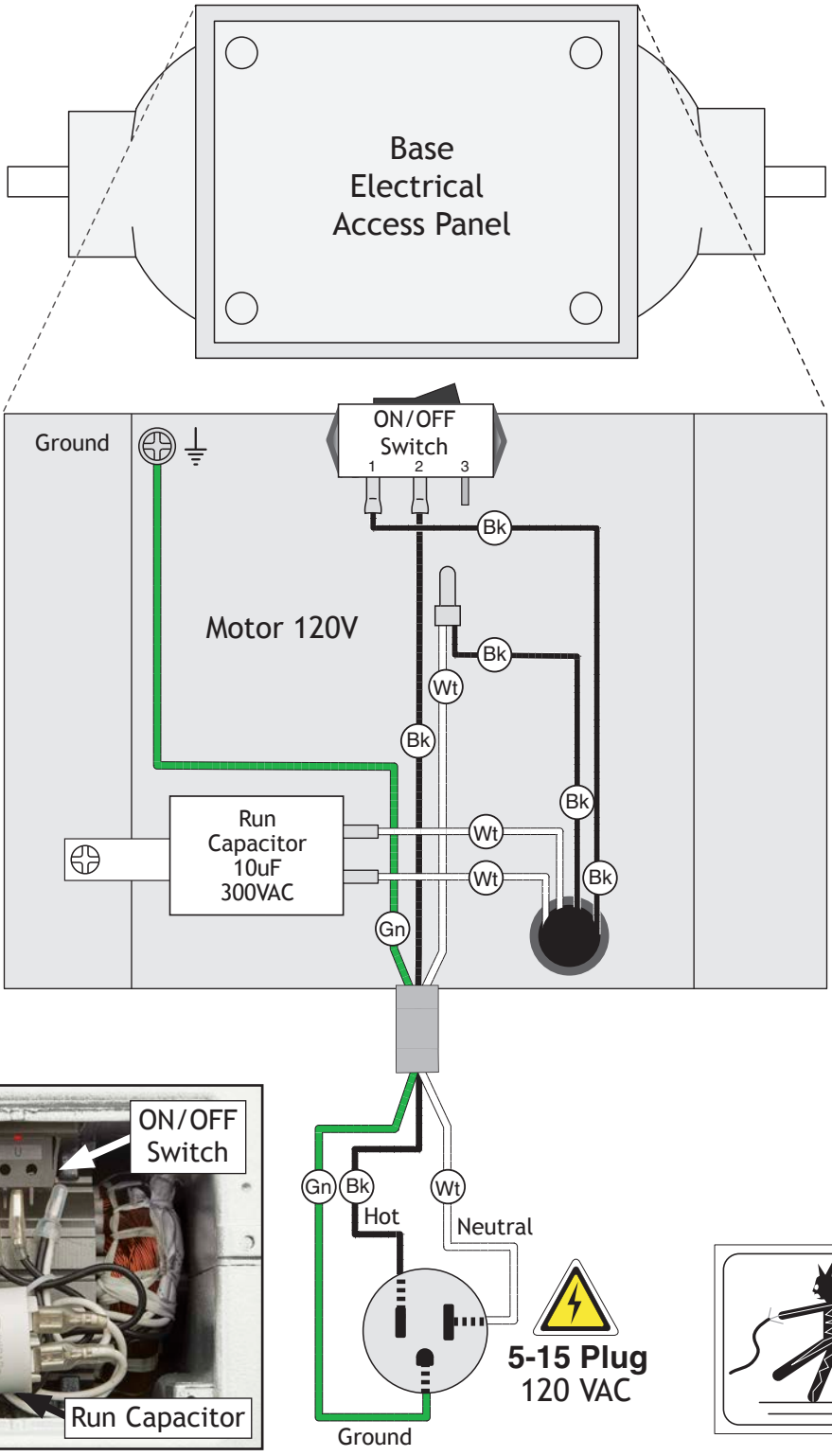
The photos and diagrams included in this section are best viewed in color. You can view these pages in color at www.shopfox.biz.

WIRING DIAGRAM COLOR KEY

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

SERVICE

Wiring Diagram



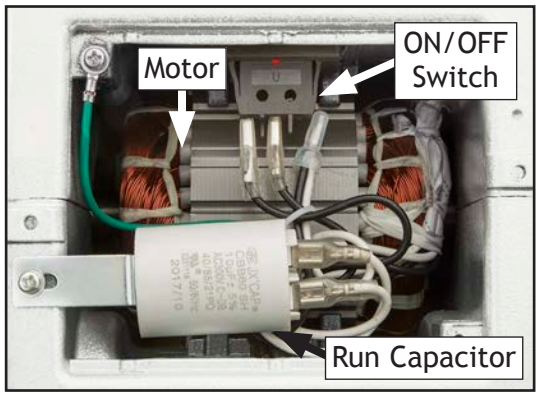
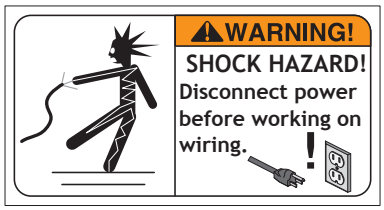


Figure 20. W1871 wiring components.

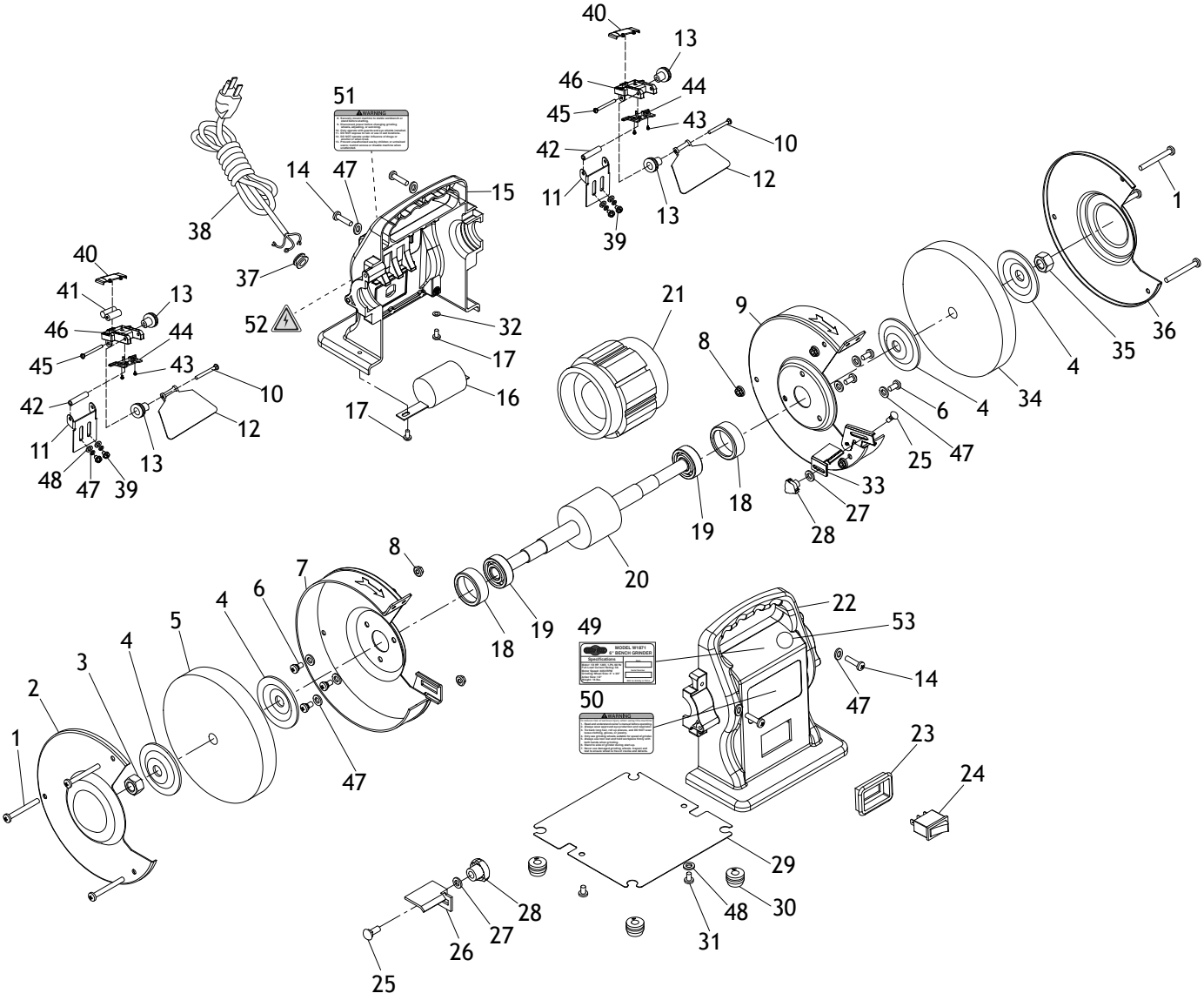


Read
Page 25
STOP
Before
Wiring

NOTICE

This motor wiring diagram is current at the time of printing; however, always use the diagram on the inside of the junction box cover when rewiring your motor!

PARTS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Parts List

REF	PART #	DESCRIPTION
1	X1871001	PHLP HD SCR M5-.8 X 50
2	X1871002	WHEEL GUARD (OUTER, LEFT)
3	X1871003	HEX NUT M12-1.75 LH
4	X1871004	GRINDING WHEEL FLANGE 1/2
5	X1871005	GRINDING WHEEL 6" X 3/4" X 1/2" 36G
6	X1871006	PHLP HD SCR M5-.8 X 10
7	X1871007	WHEEL GUARD (INNER, LEFT)
8	X1871008	FLANGE NUT M5-.8
9	X1871009	WHEEL GUARD (INNER, RIGHT)
10	X1871010	CARRIAGE BOLT M5-.8 X 55
11	X1871011	SPARK DEFLECTOR
12	X1871012	SAFETY SHIELD
13	X1871013	KNOB M5-.8, D20, ROUND
14	X1871014	PHLP HD SCR M5-.8 X 20
15	X1871015	GRINDER CASING (REAR)
16	X1871016	R CAPACITOR 10M 300V 1-3/8 X 2
17	X1871017	PHLP HD SCR M4-.7 X 8
18	X1871018	BEARING SLEEVE
19	X1871019	BALL BEARING 6202ZZ
20	X1871020	ROTOR
21	X1871021	STATOR
22	X1871022	GRINDER CASING (FRONT)
23	X1871023	SWITCH PLATE
24	X1871024	ON/OFF SWITCH K5 250V
25	X1871025	CARRIAGE BOLT M6-1 X 14
26	X1871026	TOOL REST (LEFT)

REF	PART #	DESCRIPTION
27	X1871027	FLAT WASHER 6MM
28	X1871028	KNOB M6-1, D26, 6-LOBE
29	X1871029	GRINDER BASE PLATE
30	X1871030	FOOT (RUBBER)
31	X1871031	PHLP HD SCR M5-.8 X 8
32	X1871032	EXT TOOTH WASHER 4MM
33	X1871033	TOOL REST (RIGHT)
34	X1871034	GRINDING WHEEL 6" X 3/8" X 1/2" 60G
35	X1871035	HEX NUT M12-1.75
36	X1871036	WHEEL GUARD (OUTER, RIGHT)
37	X1871037	STRAIN RELIEF TYPE-1 1/2
38	X1871038	POWER CORD 18G 3W 78" 5-15P
39	X1871039	PHLP HD SCR M5-.8 X 10
40	X1871040	BATTERY COVER
42	X1871042	HOLLOW SHAFT 5 X 8 X 42MM
43	X1871043	TAP SCREW M3 X 8
44	X1871044	LED LIGHT COVER
45	X1871045	CARRIAGE BOLT M5-.8 X 60
46	X1871046	LED LIGHT HOUSING
47	X1871047	LOCK WASHER 5MM
48	X1871048	FLAT WASHER 5MM
49	X1871049	MACHINE SPECIFICATIONS LABEL
50	X1871050	MACHINE WARNING LABEL (FRONT)
51	X1871051	MACHINE WARNING LABEL (REAR)
52	X1871052	ELECTRICITY LABEL
53	X1871053	TOUCH-UP PAINT, SHOP FOX WHITE

WARRANTY

Woodstock International, Inc. warrants all Shop Fox machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair, replace, or arrange for a dealer refund, at its expense and option, the Shop Fox machine or machine part proven to be defective for its designed and intended use, provided that the original owner returns the product prepaid to an authorized warranty or repair facility as designated by our Bellingham, Washington office with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.’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 that Shop Fox machinery complies with the provisions of any law, acts or electrical codes. We do not reimburse for third party repairs. In no event shall Woodstock International, Inc.’s liability under this limited warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. 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.

Every effort has been made to ensure that all Shop Fox machinery meets high quality and durability standards. We are commited to continuously improving the quality of our products, and reserve the right to change specifications at any time.

To register the warranty, go to **https://www.woodstockint.com/warranty**, or scan the QR code below. You will be directed to the Warranty Registration page on www.woodstockint.com. Enter all applicable production information.

WARRANTY

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