MODEL G0648
WELDING FUME EXTRACTOR
OWNER'S MANUAL

#CR10394 PRINTED IN TAIWAN

⚠ WARNING!

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

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

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

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

⚠ WARNING!

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

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

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

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INTRODUCTION

Foreword

We are proud to offer the Model G0648 Welding Fume Extractor. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0648 when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

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

Contact Info

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

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

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

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

Functional Overview

This welding fume extractor is designed to help collect and recycle shop air that is contaminated with many types of welding dust, oily smoke, and fumes.

This fume extractor can be permanently connected to a welding workstation downdraft table or wheeled to various welding locations.

A steel-cage type fan located inside of the fume extractor cabinet draws welding sparks, dust, smoke, and fumes through the shroud and ducting. The contaminated air passes through a slag drawer fitted with a 1mm stainless steel screen and an aluminum mesh that arrests sparks and collects minor welding slag.

From the slag drawer, the air passes through a 10-micron, roller-type paper filter, which automatically advances during operation to provide new filtration area and a consistent suction.

With the air now vacant of oily smoke and 98% of the welding dust, it passes through a 1-micron pleated paper-type filter where the remainder of the dust is collected. This filter element automatically vibrates, which knocks caked-on dust into the removable dust drawer.

At this point, the air passes through a pleated HEPA filter which removes the rest of the 1-micron particles and 99.97% of the 0.3-micron particles. The recycled air now re-enters the shop, scrubbed clean of the welding fumes, smoke, dust, and slag.

Identification

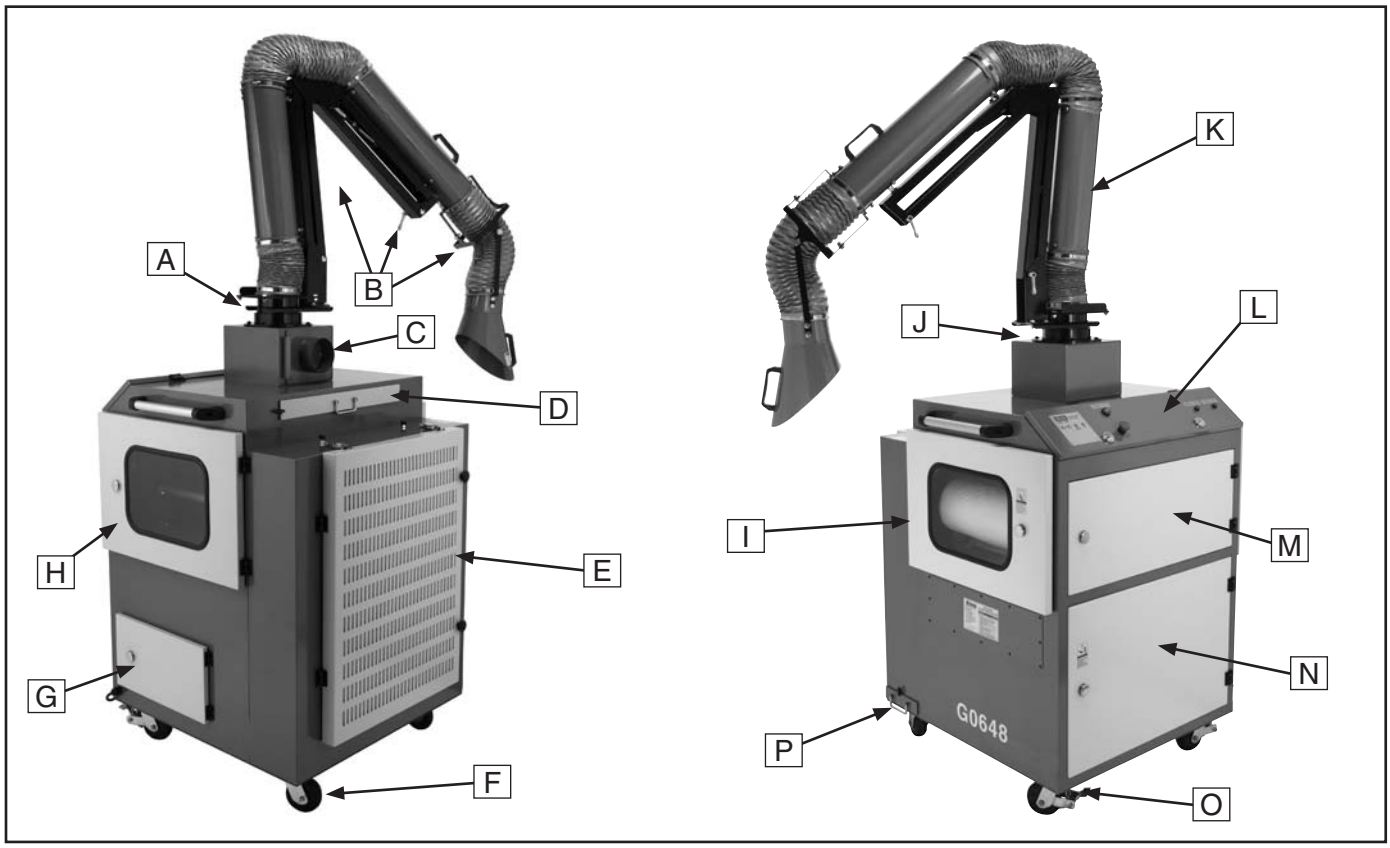


Figure 1. Features.

A. Main Blast Gate: Provides control for intermittent suction for the suction hood.

B. Ducting Support System: Frame and lock levers provide for suction hood positioning.

C. Downdraft Table Port & Blast Gate: For optional welding downdraft table connection.

D. Slag Drawer: Location for the removable stainless steel spark arrestor screen.

E. Vibrating Filter & HEPA Filter Housing: Location for the pleated filters and is the fresh air discharge location.

F. Swivel Caster: Allows for easy machine movement.

G. Main Electrical Box: Contains the master electrical system.

H. Rolling-Filter Recovery Cabinet: Allows access to the spent rolling filter material.

I. Rolling-Filter Supply Cabinet: Location for the fresh roll of filter paper.

J. Rotation Joint: Provides continuous 360° rotation of the ducting assembly.

K. 6" Ducting System: Provides for overhead welding smoke collection.

L. Control Panel: Provides location for all machine operations.

M. Conveyor Cabinet: Provides access to the rolling-filter conveyor system.

N. Motor and Fan Storage Cabinet: Provides access to the fan motor and allows for general storage.

O. Caster Wheel w/Brake: Allows for easy machine relocation and parking.

P. Vibrating Filter Dust Drawer: Clean out location for the vibrating filter waste material.

MACHINE DATA SHEET

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

MODEL G0648
WELDING FUME EXTRACTOR

Product Dimensions:

Weight ..... 728 lbs
Length/Width/Height ..... 42½" x 40 15/16" x 53⅛"
Foot Print (Length/Width) ..... 42½" x 40 15/16"

Shipping Dimensions:

Box 1
- Type ..... Wood Crate
- Content ..... Machine
- Weight ..... 728 lbs.
- Length/Width/Height ..... 46" x 46" x 60"

Box 2
- Type ..... Cardboard
- Content ..... Flexible Arm
- Weight ..... 66 lbs.
- Length/Width/Height ..... 58" x 13" x 29"

Electrical:

Switch ..... Control Panel
Switch Voltage 220V
Cord Length ..... 10 ft.
Cord Gauge ..... 14 gauge
Minimum Circuit Size ..... 25 AMP
Included Plug ..... No
Recommended Plug L15-15

Motors:

Main
- Type ..... TEFC
- Horsepower ..... 2 HP
- Voltage 220V
- Phase ..... Three
- Amps 5.94A
- Speed ..... 3450 RPM
- Cycle ..... 60 Hz
- Number of Speeds 1
- Power Transfer ..... Direct Drive

Filter Roller Motor
- Power 3W
- Voltage 110V
- Amps 0.5A
- Cycle 60Hz
- Number of Speeds 1
- Power Transfer ..... Gearbox and Chain Drive

Filter Vibrating Motor

Power	25W
Voltage	220V
Amps	0.24A
Speed	2800/3200 RPM
Cycle	60Hz
Power Transfer	Direct Drive

Main Specifications:

Filter Clean/Replace Indicator	Red Lamp (x2)
Intake Volume	800 CFM
Intake Diameter	6"
Filter Stage 1 Type/mm	Stainless Mesh/1mm
Filter Stage 1 Dimensions	21 7/8" x 21 7/8"
Filter Stage 2 Type/mm	Aluminum Mesh/Blocks Sparks
Filter Stage 2 Dimensions	22" x 22" x 7/8"
Filter Stage 3 Type/Micron	Rolling Filter/10 Micron
Filter Stage 3 Dimensions (Diameter x Width)	8" x 20"
Filter Stage 4 Type/Micron	Pleated Filter w/Vibration/1 Micron
Filter Stage 4 Dimensions	23 9/16" x 6 3/4" x 28 11/16"
Filter Stage 5 Type/Micron	Pleated HEPA Filter 99.97% of 0.3 Micron
Filter Stage 5 Dimensions	25 3/16" x 35" x 2"
Impeller Type	Backward Curved (Clockwise)
Impeller Size	13"
Outlet Size	27 1/8" x 37"

Construction

Body Construction	Formed Steel
Arm Construction	Formed Steel
Hose Construction	PVC
Hood Construction	Formed Steel
Paint.	Epoxy/Powder Coat

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Left of the Machine

Features:

5-stage Filter System
Stainless Steel Mesh Arrests Sparks and Steel Chips
Aluminum Mesh Blocks Sparks
Rolling Paper Filter With Electronic Advancement
Pleated Filter With Vibrating Function
Pleated HEPA Filter
Adjustable Arm

SECTION 1: SAFETY

⚠WARNING

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

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

⚠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. It may also be used to alert against unsafe practices.**

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

⚠WARNING

Safety Instructions for Machinery

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

⚠WARNING
Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Maintain stability and balance at all times.

23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.

⚠WARNING

Additional Safety Instructions for Welding Fume Extractors

1. **WELDING FUMES.** Welding fumes are hazardous and can cause lung damage without warning. Keep your head out of welding fumes. Use adequate ventilation at the arc to safely remove the fumes from your breathing zone and the general area. Use ANSI approved respirators for the type of welding operation. Protect others from these fumes.

2. **PROTECT BODY FROM ARC BURNS, SPARKS, AND SPATTER.** Wear correct and approved eye and body protection. DO NOT wear jewelry or frayed clothing. Use a welding helmet with the correct shade of filter for the operation.

3. **EQUIPMENT MAINTENANCE.** Make sure equipment inspections and maintenance are performed by a qualified person and keep all seals and gaskets leak-free. Stop the welding operation and disconnect the welder from power if the fume extractor is leaking or malfunctioning.

4. **WORKING AREA.** Keep working area clear of any material not involved in the welding operation. Keep all equipment, workpieces, and work surfaces clean, dry, and free of entanglements. Keep lead cables organized and away from your body.

5. **WELDING IN A CONFINED SPACE CAN BE HAZARDOUS.** Always open all covers, sustain forced ventilation, remove toxic and hazardous materials, and provide a power disconnect to the welder inside the work space. Always work with someone who can give you help from outside the space. Welding can displace oxygen. Always check for safe breathing atmosphere and provide air-supplied respirators if necessary. Keep in mind that all normal welding hazards are intensified in a confined space.

6. **PREVENT FIRES.** Welding work zones must be kept clear of flammable liquids, such as gasoline and solvents; combustible solids, such as paper and wood; and flammable gases, such as acetylene and hydrogen. Provide approved fire barriers and fire extinguishing equipment for the welding zone. Stay alert for sparks and spatter thrown into cracks and crevices that can start a smoldering fire. Inspect the work area again one hour after welding for any potential fire hazards.

7. **EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties performing the intended operation, stop using the equipment. Contact our Technical Support Department at (570) 546-9663.

⚠WARNING

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

⚠CAUTION

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

Meeting Welding Fume Extraction Codes and Standards

Welding, cutting, brazing, or soldering of metals can give off poisonous fumes containing zinc, lead, beryllium, cadmium, mercury, fluorine, and hexavalent chromium and others. These fumes typically originate from fluxes, solders, anti-corrosion coatings, pigments, metal fillers, and residual chemicals on the workpiece. This machine is designed to help meet the new welding shop clean air requirements mandated by OSHA. The Model G0648 Welding Fume Extractor is designed to be a part of an overall fume control system. It is NOT designed to serve as a "single-solution" for keeping workers safe from all welding fumes. You must contact OSHA to find out how to design and maintain the best overall welding fume control system for your work station or shop. Often, depending on the workspace size, volume of work, type of material to be welded, or other special circumstances, you must use additional safety equipment such as personal air line respirators, hoods, masks, and complete body protection.

Contact the organizations below to help you meet welding fume extraction requirements:

Occupational Safety and Health Administration (**OSHA**).

—Code of Federal Regulations, Title 29 Labor, Parts 1910.1 to 1910.1450, available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (telephone: 800-321-6742; web site: www.osha.gov).

American Welding Society (**AWS**).

—Fumes and Gases in the Welding Environment, available from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112-5776 (800-854-7179; web site: www.global.ihs.com).

American National Standards Institute (**ANSI**).

—Safety in Welding, Cutting, and Allied Processes (ANSI Z49.1), available from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112-5776 (telephone: 800-854-7179; web site: www.global.ihs.com).

National Institute for Occupational Safety and Health (**NIOSH**).

—Safety and Health in Arc Welding and Gas Welding and Cutting, NIOSH Publication No. 78-138. Cincinnati,OH (telephone: 800-356-4674; web site: http://www.cdc.gov/niosh).

International Agency For Research On Cancer (**IARC**).

—Monographs on the Evaluation of Carcinogenic Risks to Humans, Chromium, Nickel, and Welding, Vol. 49 (1990), Oxford University Press, New York, NY 10016 (telephone: 212-726-6000; web site: www.oup-usa.org).

National Fire Protection Association (**NFPA**)**,** P. O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101, (617) 770-3000, Website: *www.nfpa.org* and *www.sparky.org*.

—National Electrical Code, NFPA Standard 70

—Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B

American Conference of Governmental Industrial Hygienists (**ACGIH**).

—Documentation of the Threshold Limit Values and Biological Exposure Indices, available from ACGIH, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634 (telephone: 513-742-2020; web site: www.acgih.org).

SECTION 2: CIRCUIT REQUIREMENTS

220V 3-Phase Operation

⚠WARNING

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

⚠WARNING

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

Full Load Amperage Draw

Amp Draw at 220V 3-Phase..... 5.94 Amps

Power Supply Circuit Requirements

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

Minimum Circuit Size (220V 3-Phase)... 15 Amps

Power Connection

The power connection device depends on the type of installed or planned service. We recommend using a NEMA15-15 plug and receptacle shown in **Figure 2**.

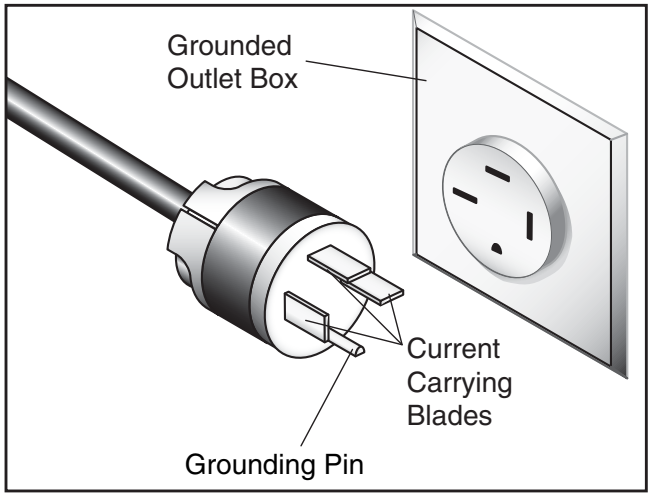


Figure 2. NEMA 15-15 plug and receptacle.

Extension Cords

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

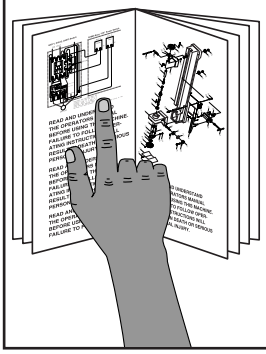
- Use at least a 14 gauge cord that does not exceed 4 meters in length.
- Ensure that the extension cord contains a ground wire and plug pin.

NOTICE

This machine uses sensitive electronics that rely on stable current on all power supply legs. We do not recommend connecting this machine to a phase converter. Ignoring this notice may void warranty.

SECTION 3: SETUP

Setup Safety



⚠WARNING

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

⚠WARNING

Wear safety glasses during the entire setup process!

⚠WARNING

This machine and its components are very heavy. Get lifting help or use power lifting equipment such as a forklift to move heavy items.

Items Needed for Setup

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

Description	Qty
• Hex Wrench $^{3}/_{16}$"	1
• Wrench 12mm	1
• Assistant or Hoist	1

Unpacking

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

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

When you are completely satisfied with the condition of your shipment, inventory the contents.

Inventory

The following is a description of the main components shipped with your machine. Lay the components out to inventory them.

Note: *If you can't find an item on this list, check the mounting location on the machine or examine the packaging materials carefully. Occasionally we pre-install certain components for shipping purposes.*

Crate 1: (**Figure 3**)	**Qty**
A. Welding Fume Extractor Unit	1
B. Button Head Cap Screws $^{5}/_{16}$"-18 x 1" (Ducting Arm)	6
C. Flat Washer $^{5}/_{16}$" (Ducting Arm)	6
D. Roller Filter Paper (Pre-Installed Roll)	1
E. Door Levers	2
F. Downdraft Table Adapter Box	1
G. Bolt Bag	1
—Hex Bolts $^{5}/_{16}$"-18 x $^{3}/_{4}$" (Adapter Box)	6
—Flat Washers $^{5}/_{16}$" (Adapter Box)	6

Box 2: (**Figure 4**)	**Qty**
H. Ducting Arm and Shroud Assembly	1

WARNING

SUFFOCATION HAZARD!

Immediately discard all plastic bags and packing materials to eliminate choking/suffocation hazards for children and animals.

Figure 3. Welding fume extractor unit.

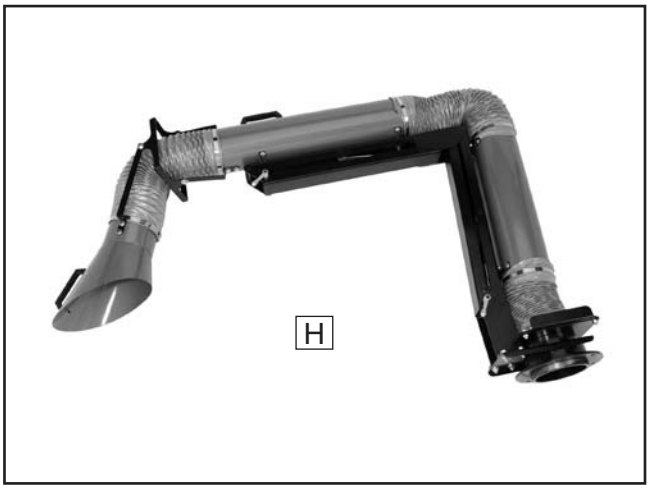
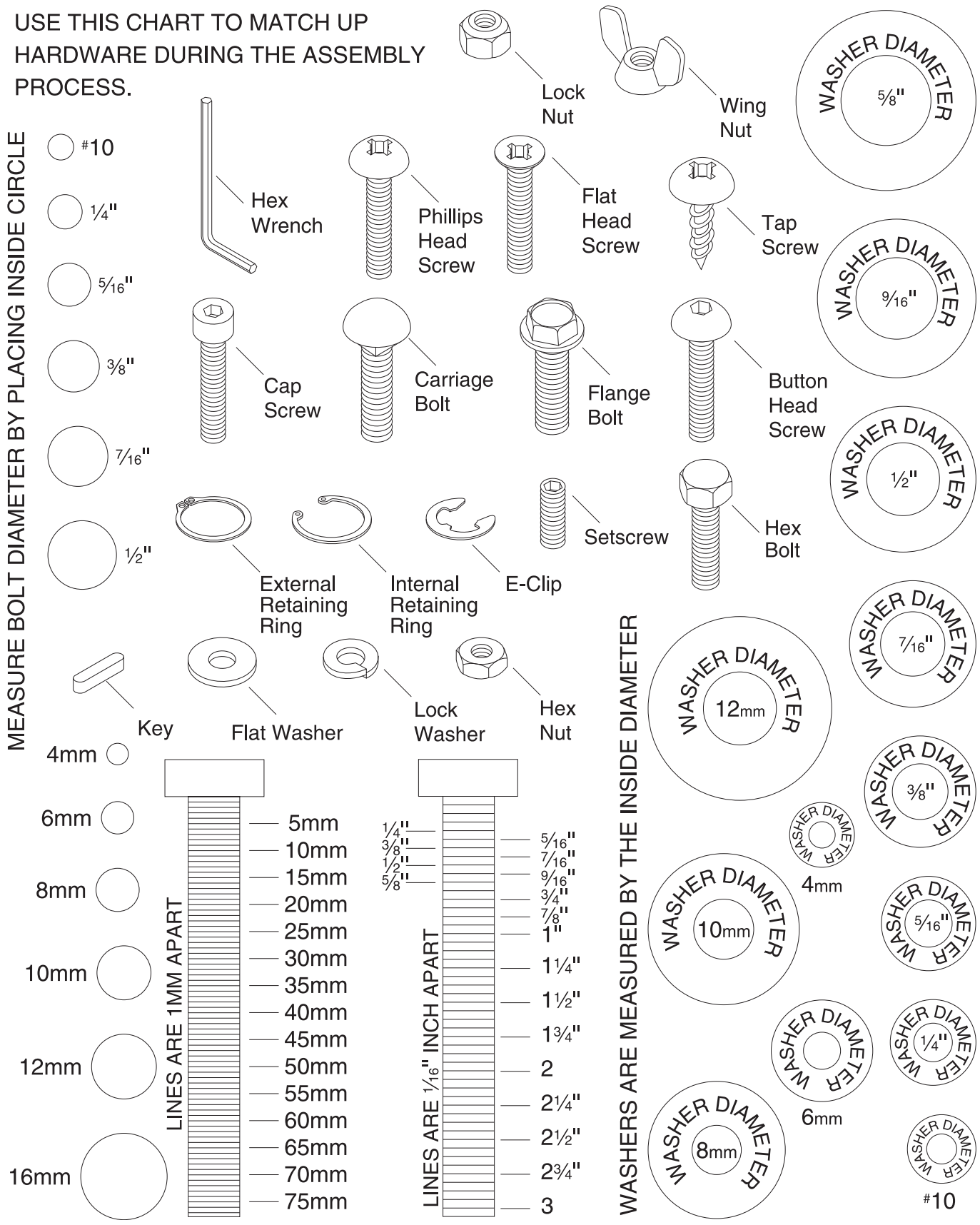


Figure 4. Ducting arm assembly.

If any nonproprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Hardware Recognition Chart



Site Considerations

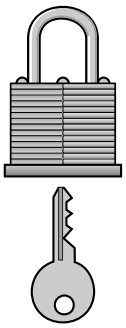
Floor Load

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

Placement Location

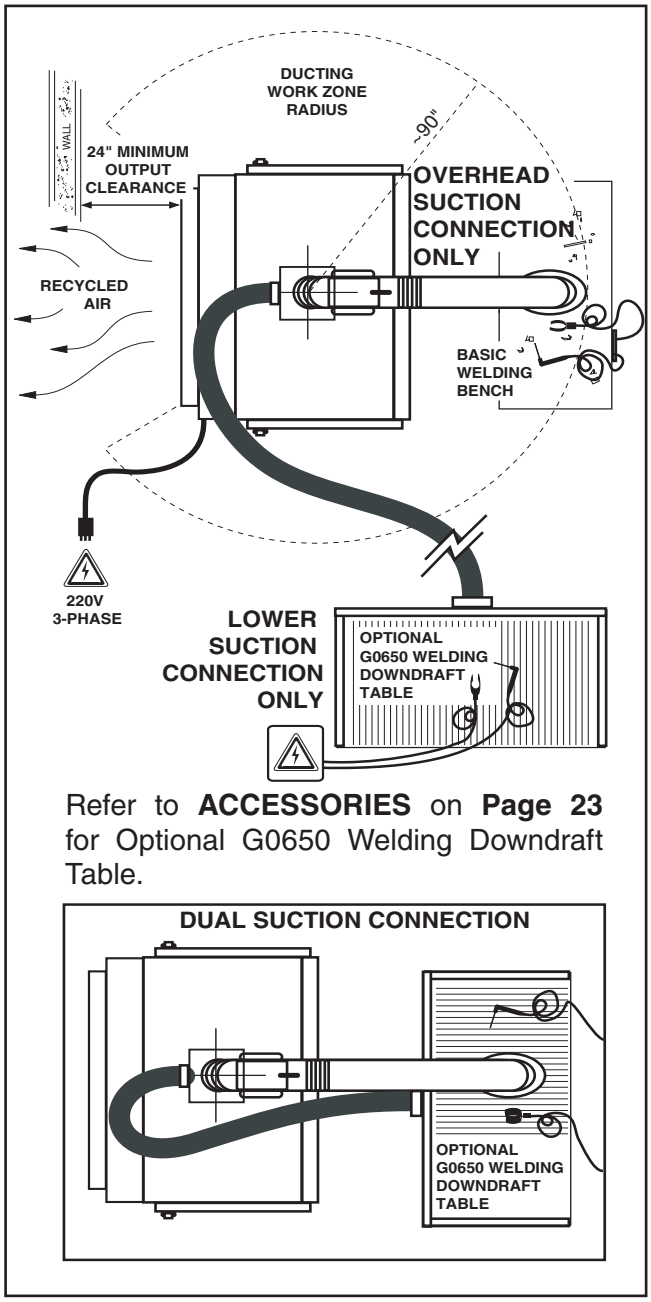
This machine is designed to operate when the ambient temperature is between 41°F and 122°F, and when the humidity is between 30% and 95%. However, if the machine is only to be used in cycles that are less than 24-hours and is allowed to cool between the runs, the maximum ambient temperature range for operation can be is 133°F.

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



⚠CAUTION

Children and visitors may be seriously injured if unsupervised around this machine. Lock entrances to the shop or disable start switch or power connection to prevent unsupervised use.



Refer to **ACCESSORIES** on **Page 23** for Optional G0650 Welding Downdraft Table.

Figure 5. Connection types and minimum working clearances.

Ducting Arm Installation

To install the ducting arm:

1. Remove the six button head cap screws and flat washers that surround the 6" intake port on top of the machine.

2. On the intake port where the button head screws were, position and install the down-draft table adapter box with the six hex bolts and washers.

   Note: *Position the port so it points in the direction where you will connect ducting to reduce the need for elbows and tees. Having a duct that is longer than 15 feet, using alternating sizes of connections, or using too many elbows or tees will dramatically reduce the available CFM at your downdraft table. When connecting duct to this fume extractor, make sure that you use only fireproof duct and fittings. Refer to the* ***Accessories*** *section on* ***Page 23*** *for fireproof duct options.*

3. With the help of an assistant or hoist, install the base of the ducting arm on the top of the adapter box, and secure it in place with the six previously removed button head cap screws and washers (**Figure 6**).

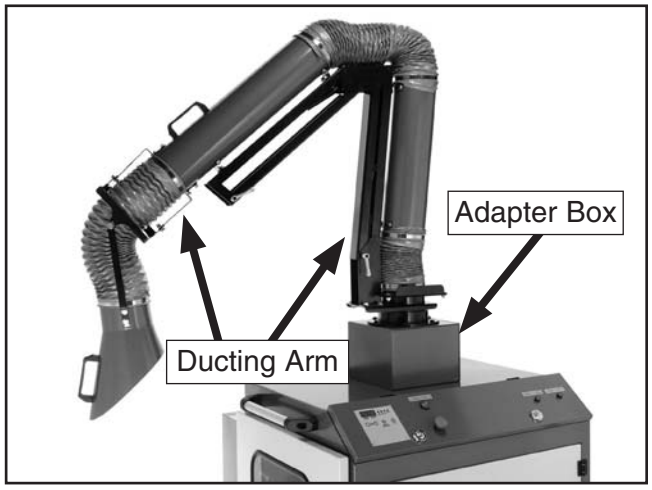


Figure 6. Ducting installation.

Test Run

Once the ducting has been attached, test run your machine to make sure it runs properly.

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

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

To test run the machine:

1. Refer to the **Maintenance** section on **Page 25**, and make sure that all filters are properly positioned.

2. Connect the machine to the power source. The EXHAUSTING TIME and FILTER ROLLING TIME digital displays (**Figure 7**) will now be lit. The values shown on the displays are the initial factory settings.

Figure 7. Control panel.

3. Push in the emergency stop button shown in **Figure 7**, then rotate it so it pops out.

4. Completely open both blast gates on the ducting arm (**Figure 8**).

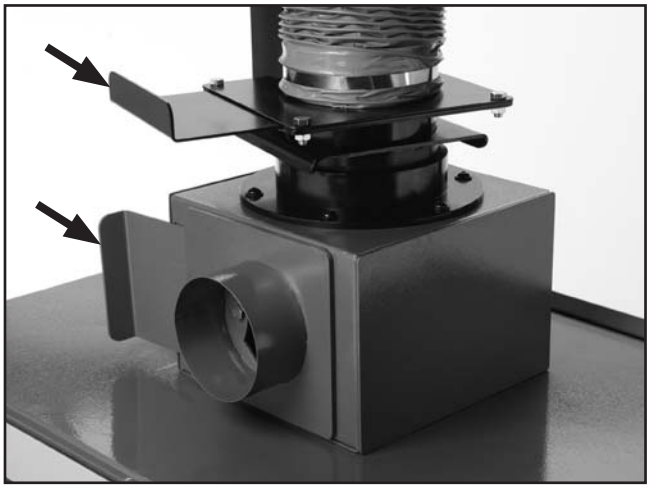


Figure 8. Ducting blast gates.

5. Push and hold the CLEAN FILTER (MANUAL MODE) button momentarily. The vibrating filter motor will agitate the filter and the FILTER CLEANING lamp will light. You will hear and feel a substantial vibration.

6. Push the ON/OFF button, the OPERATING LED will illuminate, and after a moment the fan will start.

7. Let the machine run for at least 1 minute while you evaluate the machine for the following:

   —Listen for any whistling sounds coming from doors, windows, and panels which indicate a poor seal or gasket.

   —If a fan is not working, or you hear any strange or unusual metallic noise or feel a harmonic vibration, shut the machine down and correct the problem before operating the machine again. Always disconnect the machine from power when investigating or correcting potential problems.

8. Push the ON/OFF button. The OPERATING LAMP will go out and the FILTER CLEANING lamp will light. The lamp indicates that as soon as the fan completely stops, the vibrating filter is set to operate in three short durations for approximately 3 seconds each.

9. When the vibrating filter is finished, push the ON/OFF button and restart the machine.

10. On the control panel, push the ON/OFF button.

    —If the machine starts, turn the machine ***OFF*** and disconnect it from power. The emergency stop button is at fault. Do not put the machine into operation until the problem is corrected.

    —If the machine does not start, the emergency stop button is operational. Proceed to the next **Step**.

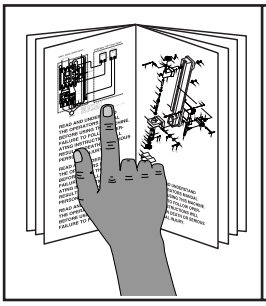
11. Push in and then rotate the emergency stop button clockwise (**Figure 7**), so it pops out and resets.

NOTICE

This machine uses sensitive electronics that rely on a good ground. Never unplug the machine while it is running or machine damage can occur. Always use the ON/OFF button or the EMERGENCY STOP button to shut the machine down. When the machine is completely stopped, it then can be unplugged from the power supply. Ignoring this notice will void the warranty.

SECTION 4: OPERATIONS

Operation Safety

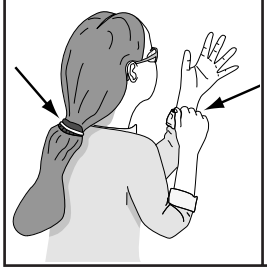


⚠WARNING

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

⚠WARNING

Damage to your eyes and lungs could result from using this machine without proper protective gear. Always wear the appropriate respirator and welding helmet fitted with the correct type of eye protection when welding and operating this machine.



⚠WARNING

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

NOTICE

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

General Operation

This welding fume extractor is not designed as a substitute for a respirator or fresh-air type respirator. Make sure that you are familiar with the materials to be welded and know what types of fumes are produced. Common metals often have coatings that produce poisonous fumes when heated. Before welding or cutting, make sure to strip coatings off at least four inches away from the area of heat application.

During your welding job, periodically pay attention to the level of caking and the color of the rolling filter paper as seen through the window. Should the type of welding you do change or if heavy smoking of paint, rubberized undercoating, or coatings of unknown material cause excessive smoke, you may have to readjust the EXHAUSTING TIME and FILTER ROLLING TIME so an adequate CFM can be maintained.

It is always better to follow good welding practices and remove coatings that may smoke and contaminate the weld. This machine does not save you from the task of proper workpiece preparation.

This fume collector is not designed to collect smoke that contains burning slag or liquefied metal generated from a cutting torch or a plasma cutter. In these circumstances, you must use the appropriate welding downdraft table that will arrest the molten metal and slag.

To use the machine:

1. Refer to **Control Panel Operation** on **Page 19** for detailed control panel functions.
2. Connect the machine to power.
3. Open or close the appropriate ducting blast gate.
4. Position the ducting over your workpiece, and use the lock levers to hold it in place.

5. Press the ON/OFF button. The OPERATING LED will light, and the machine will start momentarily.

6. Observe the digital display and make sure the EXHAUSTING TIME and FILTER ROLLING TIME values are at your last setting, or at least at the factory initial settings for EXHAUSTING TIME, and for FILTER ROLLING TIME.

7. Begin welding, being sure to follow all safety rules.

Note: *If the warning lamp/buzzer comes on, it indicates that the rolling-type filter has run out and it is time to replace the roll.*

8. When finished welding, press the ON/OFF button, and the machine will wind down slowly until the fan stops.

Note: *After the machine has operated over a minute and then shut down, the FILTER CLEANING lamp will light indicating that as soon as the fan completely stops the vibrating filter will operate in three short durations approximately 3 seconds each.*

9. For additional cleaning, manually push and hold the vibrating filter button for a few more seconds to remove any caked-on material.

10. Clean out both the slag and dust drawers.

11. After welding, make it a habit to inspect under the machine and your work area for anything that could smolder and start a fire.

Control Panel Operation

A. EXHAUSTING TIME (min): Displays, in minutes, how much welding time is allotted before new filter paper is exposed.

B. FILTER ROLLING TIME (sec): Displays, in seconds, the duration of roller-filter advance.

C. FILTER CLEANING: Lamp lights when the vibrating-type filter is being de-caked.

D. FILTER ROLLING: Lamp lights when the roller-type filter advances.

E. OUT OF FILTER: Lamp lights when the roller-type filter has run out and needs changing.

F. OPERATING: Lamp lights when the machine is running.

G. SETTING TIME (Left Button): Controls the **EXHAUSTING TIME**.

H. SETTING TIME (Right Button): Controls the **FILTER ROLLING TIME**.

I. CLEANING FILTER (MANUAL MODE) Button: When the machine is ***OFF***, press this button to start the vibrating motor and de-cake the pleated filter.

J. ON/OFF Button: Toggles machine operation between ***ON*** and ***OFF***.

K. DOOR LATCH: Allows access to the control panel electrical system.

L. EMERGENCY STOP Button: Shuts down the machine in the event of an emergency.

M. FILTER INDICATOR Buzzer/Lamp: Lights and sounds when the roller-type filter has run out of paper.

N. FILTER INDICATOR Lamp: Lights when the vibrating filter needs to be cleaned or replaced.

O. FILTER INDICATOR Lamp: Lights when the HEPA filter needs to be cleaned or replaced.

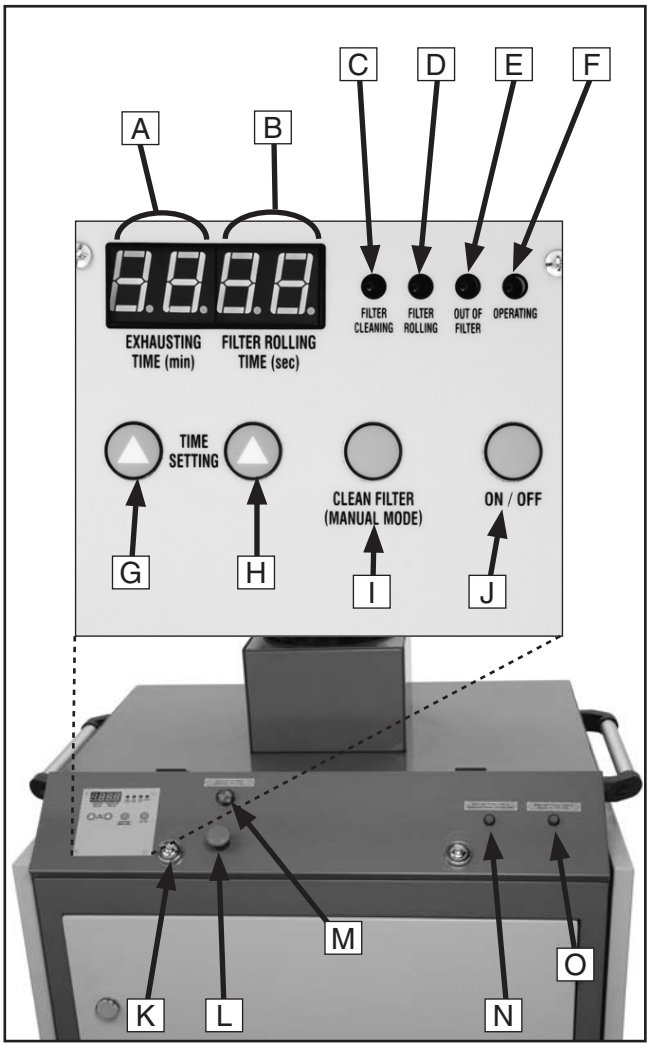


Figure 9. Controls.

Changing Rolling-Filter Timing

As the rolling-type filter becomes clogged, the EXHAUSTING TIME and ROLLING TIME should be set to advance the rolling type filter as to expose just enough filter paper so that a good working CFM is maintained. This is accomplished by unrolling just enough filter paper to maintain adequate suction at the point of welding. The general idea is to initially find the point at which the filter paper begins to clog and suction begins to drop off. When you determine that point, both (or either) the EXHAUSTING TIME or FILTER ROLLING TIME settings should be adjusted to restore acceptable suction.

Exhausting Time: This is the time interval between the filter advance events. The time intervals can be set at 30, 45, 60, 120, 180, and 240 minutes. For example, if 45 minutes is selected, the filter will advance every 45 minutes for the duration you have selected below under FILTER ROLLING TIME.

Filter Rolling Time: This is the time duration the filter is allowed to advance, which exposes new filter paper. The advance time can be set at 10, 15, 20, 25, 30 or 40 seconds. For example, the greater the filter rolling time, the more fresh filter paper is exposed.

To change the rolling-filter timing:

1. Stop the machine.
2. Refer to the **Rolling Filter Consumption Chart** on **Page 21** to select your needed time values.
3. Open the control panel door (**Figure 10**).
4. Slide the NOR/SET switch (**Figure 10**) to the SET position.

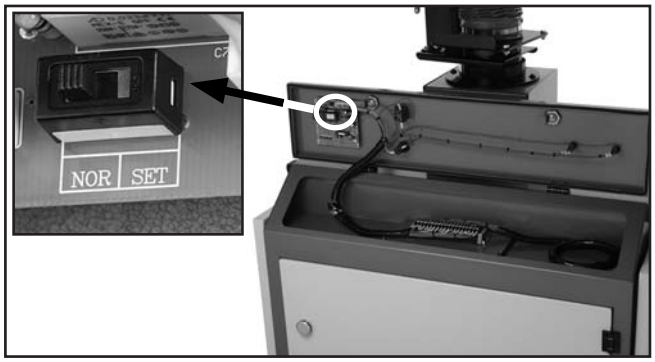


Figure 10. NOR/SET control.

5. Press the Time Setting buttons on the control panel to your new time settings**.**
6. Slide the NOR/SET switch to the NOR position.
7. Close the control panel door.

MODEL G0648
ROLLING FILTER CONSUMPTION CHART
(FOR 20" x 200' ROLLING FILTER)

Rolling Frequency		Rolling Duration		Filtration Cycle		Cycles per Roll		Filter Life Span (Approx.)		Filter Life Span at 8 Hours/Day (Approx.)
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
30	+	10	=	0:30:10	x	250	=	126	=	15.7
30	+	15	=	0:30:15	x	167	=	84	=	10.5
30	+	20	=	0:30:20	x	125	=	63	=	7.9
30	+	25	=	0:30:25	x	100	=	51	=	6.3
30	+	30	=	0:30:30	x	83	=	42	=	5.3
30	+	40	=	0:30:40	x	63	=	32	=	4
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
45	+	10	=	0:45:10	x	250	=	188	=	23.5
45	+	15	=	0:45:15	x	167	=	126	=	15.7
45	+	20	=	0:45:20	x	125	=	94	=	11.8
45	+	25	=	0:45:25	x	100	=	76	=	9.5
45	+	30	=	0:45:30	x	83	=	63	=	7.9
45	+	40	=	0:45:40	x	63	=	48	=	6
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
60	+	10	=	1:00:10	x	250	=	251	=	31.3
60	+	15	=	1:00:15	x	167	=	168	=	21
60	+	20	=	1:00:20	x	125	=	126	=	15.7
60	+	25	=	1:00:25	x	100	=	101	=	12.6
60	+	30	=	1:00:30	x	83	=	84	=	10.5
60	+	40	=	1:00:40	x	63	=	64	=	8

Rolling Frequency		Rolling Duration		Filtration Cycle		Cycles per Roll		Filter Life Span (Approx.)		Filter Life Span at 8 Hours/Day (Approx.)
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
120	+	10	=	2:00:10	x	250	=	501	=	62.6
120	+	15	=	2:00:15	x	167	=	335	=	41.8
120	+	20	=	2:00:20	x	125	=	251	=	31.3
120	+	25	=	2:00:25	x	100	=	201	=	25
120	+	30	=	2:00:30	x	83	=	167	=	20.8
120	+	40	=	2:00:40	x	63	=	127	=	15.8
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
180	+	10	=	3:00:10	x	250	=	751	=	93.8
180	+	15	=	3:00:15	x	167	=	502	=	62.7
180	+	20	=	3:00:20	x	125	=	376	=	47
180	+	25	=	3:00:25	x	100	=	301	=	37.6
180	+	30	=	3:00:30	x	83	=	250	=	31.2
180	+	40	=	3:00:40	x	63	=	190	=	23.7
Minutes		Seconds		Hours:Min:Sec		Cycles		Hours		Days
240	+	10	=	4:00:10	x	250	=	1001	=	125
240	+	15	=	4:00:15	x	167	=	669	=	83.6
240	+	20	=	4:00:20	x	125	=	501	=	62.6
240	+	25	=	4:00:25	x	100	=	401	=	50
240	+	30	=	4:00:30	x	83	=	333	=	41.6
240	+	40	=	4:00:40	x	63	=	253	=	31.6

Rolling Duration (Seconds)		Length Rolled (Approx.)		Total Paper Length		Number of Cycles Per Roll
10	=	9-7/16"	/	200'	=	250
15	=	14-3/16"	/	200'	=	167
20	=	18-7/8"	/	200'	=	125
25	=	23-5/8"	/	200'	=	100
30	=	28-3/8"	/	200'	=	83
40	=	37-3/4"	/	200'	=	63

To reduce excessive fume production during related operations and minimize filter consumption, strip all workpiece coatings (paint, varnish, rust, etc.) at least 4" from the location of heat application.

To minimize filter waste, do not allow the machine to run when fumes are not being produced.

When the rolling filter begins to run low, an alarm will sound, indicating that the filter will soon need to be replaced.

SECTION 5: ACCESSORIES

T20474—First Layer Stainless Screen
Made of high-quality stainless steel, this 1mm removable screen arrests sparks and stops hot slag from entering the machine.

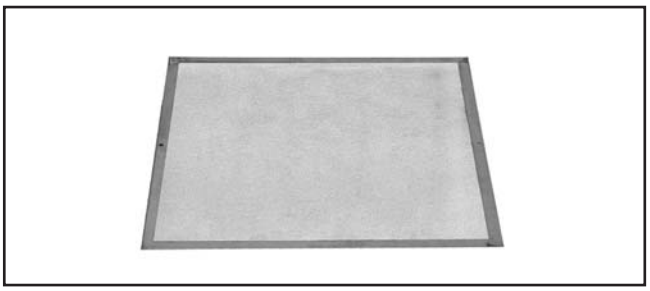


Figure 11. Replacement screen for G0648.

T20553—Second Layer Aluminum Mesh
Made of a high-quality aluminum alloy, this removable mesh arrests sparks and stops fire sparks from entering the machine.

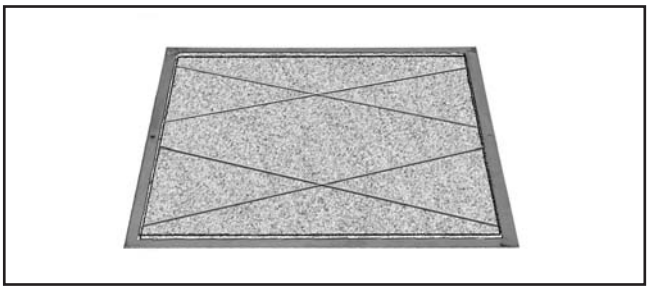


Figure 12. Replacement mesh for G0648.

T20475—Third Layer Paper Filter Roll
This rolling-type filter is the consumable workhorse filter of your machine. It removes most of the 10-micron and larger grit, dust, and oily smoke.

Figure 13. Replacement filter paper for G0648.

T20529—Fourth Layer Filter
This filter collects 98% of the 1-micron particles.

Figure 14. Replacement vibrating filter.

T20530—Fifth Layer HEPA Filter This filter removes 99.97% of the 0.3-micron particles.

Figure 15. Replacement HEPA filter for G0648.

H5297 6" Welding Fume Collection Kit
Our starter kit includes everything you will need for a simple, single machine set up at one low price. The branch and end cap makes your fume extraction system expansion ready for future growth. The an addition kit will allow you to expand as your shop gets bigger.

- 2 machine adapters
- 10 pipe clamps
- 3 6' pipes
- 1 branch
- 3 pipe hangers
- 1 end cap
- 3 adjustable nipples
- 1 90° elbow
- 1 60° elbow

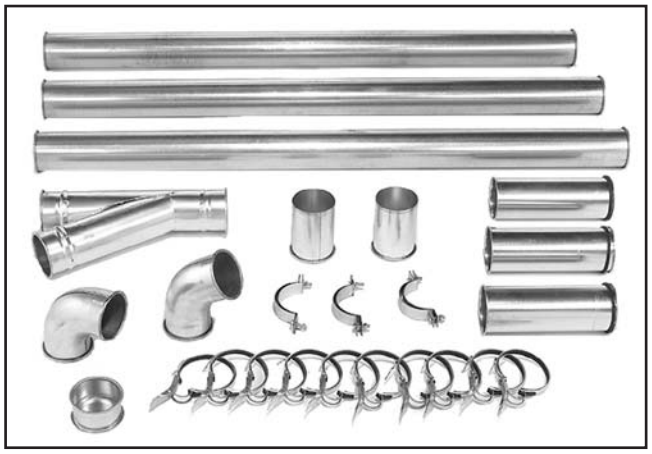


Figure 16. Model H5297 welding fume collection kit.

H7217—Rigid Flex Hose
This Rigid Flex Hose with rolled collars provides just enough flexibility to make difficult connections while still keeping the inside wall as smooth as possible. 6" diameter and 5 feet long.

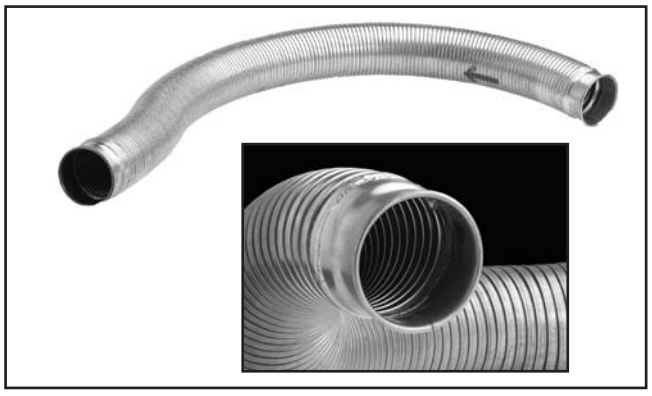


Figure 17. Model H7217 rigid flex hose.

Steel 6" Elbows
5 styles of 6" diameter elbows give you the versatility to create just about any duct run. Well made and intended for tough use.

G7366 6" 30° Elbow.
G7367 6" 45° Elbow.
G7368 6" 60° Elbow.
G7369 6" 90° Short Elbow.
G7370 6" 90° Long Elbow.

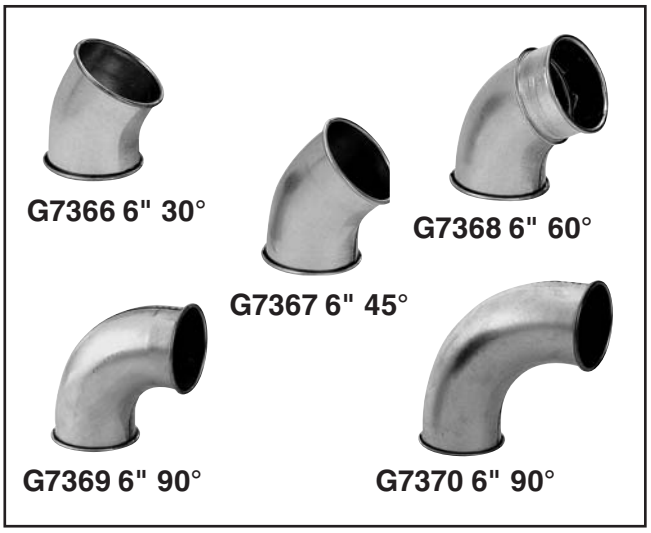


Figure 18. Steel elbows.

G0650—Welding Downdraft Table
This 37" wide x 22" long downdraft table is designed to collect welding/grinding sparks, slag, and dust during welding and cutting operations. When connected to the Grizzly G0648 Welding Fume Collector, both overhead and lower fume collection suction can be used.

Figure 19. G0650 Welding Downdraft Table.

H7786—Auto Darkening Welding Helmet
Automatic UV and IR filters protect eyes from harmful visible and invisible light during welding. Switching time is less than or equal to 2 milliseconds, so there's no need to flip the helmet up to see your work under normal light conditions. Full face protection features adjustable head suspension and adjustable delay time, sensitivity and dark shade protection. Viewing area is 3½" x 1½". Includes 2 AAA batteries.

Figure 20. Model H7786 welding helmet.

T20505—Welding Respirator with Valve
Added flame retardants help reduce the filter shell flammability, making these N99 Premium Particulate Respirators ideal for welding applications. NIOSH certified to a 99% efficiency for particulates free of oil.

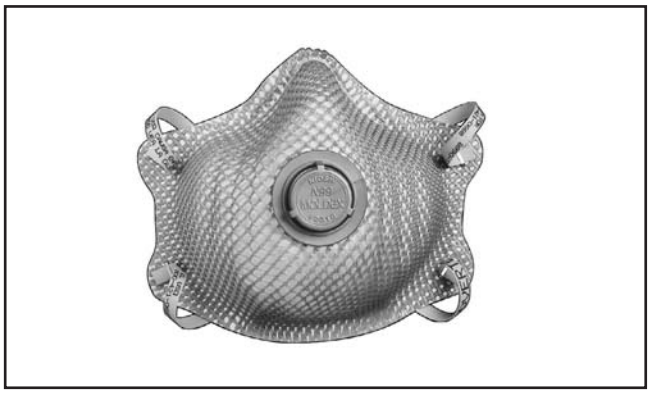


Figure 21. Model T20505 welding respirator.

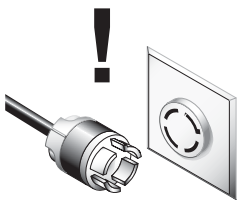
H9748—Leather Jacket Medium (40–42)
H9887—Leather Jacket Large (44–46)
H9888—Leather Jacket X-Large (48–52)
H9746—Leather Knee Pads
H9745—Leather Shoe Covers
These leather jackets, knee pads, and shoe covers provide full protection from welding sparks and spatter. Gloves not included.

Figure 22. Models H9748/H9746/H9745 leather welding protection.

H3157—Deluxe Welding Gloves
Top grain, leather gloves protect against welding hazards. Extra long to protect wrists and forearms. One size fits all.

Figure 23. Model H3157 deluxe welding gloves.

SECTION 6: MAINTENANCE



⚠WARNING

Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

Schedule

For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section. Always wear an OSHA approved respirator when cleaning this machine.

Daily Check/Maintenance:
- Leaking seals or ducting.
- Worn or damaged power cord.
- Clean slag drawer screens.
- Empty dust drawer.
- Inspect and correct for any other unsafe condition.

Weekly Check/Maintenance:.
- Carefully wipe off any dust caked on the electronic eye lens (see **Figure 24** for location).

Monthly Check/Maintenance:
- Disconnect from power and vacuum and wipe out any dust buildup from the inside of the control box and filter cabinets. Do not use compressed air close to the filters or electrical components.

- Use a dry rag and wipe all drive chains and sprockets clean; then brush the chain links with a thin coat of light machine oil. Refer to **Figure 24** for locations.

Lubrication

Use a dry rag to wipe all drive chains and sprockets clean; then brush the chain links with a thin coat of light machine oil. Refer to **Figure 24** for locations.

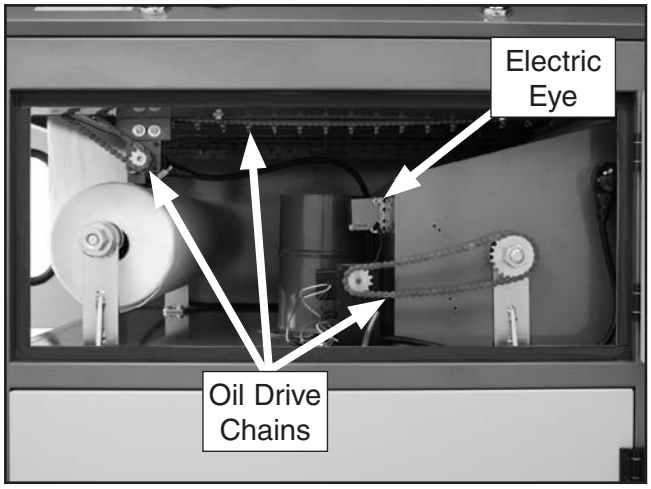


Figure 24. Lubrication locations.

Cleaning

Cleaning the Model G0648 is relatively easy. Put on an OSHA approved respirator and vacuum excess dust, and wipe off the remaining dust with a damp cloth. Do not use harsh detergents or solvent on the cabinet, and never spray compressed air close to filters or electrical components.

Slag-Screen Cleaning

Make sure that you clean the slag screen often and inspect for holes or damage. Under correct use, this screen should last for years.

Tools Needed	Qty
Soft Brass Wire Brush	1
OSHA Approved Respirator	1
Shop Vacuum	1

To perform this procedure:

1. UNPLUG THE MACHINE!

2. Put on your respirator, unlock and remove the slag drawer, and then the screen (**Figure 25**).

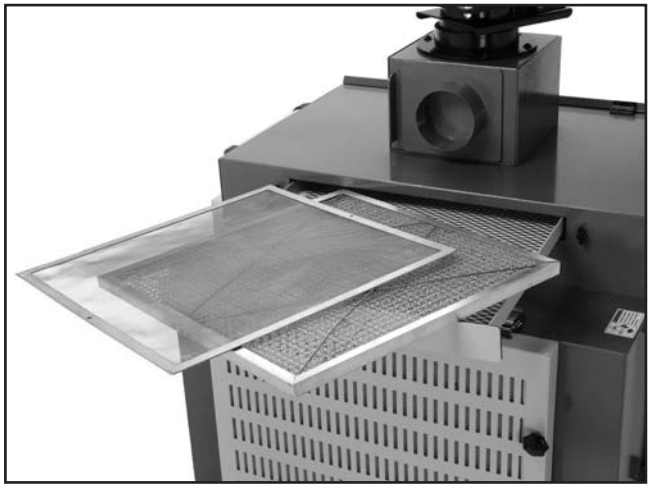


Figure 25. Slag-screen.

3. Inspect the drawer face seal for evidence of leaks or tears. Reseal as required.

4. Carefully use a wire brush and tap the screen to remove the built up dust and slag. If a piece of solder or slag has welded to the screen, do not pry it off or you may tear a hole in the screen.

5. Vacuum up the loose dust and reinstall the screen and the slag drawer.

Long-Term Storage

If this machine needs to be stored for a long period of time, make sure that the following conditions are met:

- Remove and manually clean the vibrating filters and the HEPA filter.

- Clean and lubricate the drive chains.

- Place the machine in a dry area where the humidity range will not vary beyond 30% to 95% and the storage temperature will not vary beyond -13° to 158°F.

- Place a moisture-absorbing desiccant bag in the control panel box with a note to remove when the machine is put back in operation.

- Close both blast gates, and lock all caster wheels from rolling.

- Cover the machine to protect it from dust and moisture.

Rolling-Filter Replacement

This rolling-type paper filter is the consumable workhorse filter of your machine. It removes most of the 10-micron and larger grit, dust, and oily smoke.

Tools Needed **Qty**
OSHA Approved Respirator 1

To perform this procedure:

1. Put on your respirator and open the rolling-filter supply cabinet door (**Figure 26**).

Figure 26. Rolling-filter supply cabinet.

2. Open the rolling-filter recovery cabinet door (**Figure 27**).

Figure 27. Rolling-filter recovery cabinet.

3. While holding the axle, push on the spring-loaded spindle and swing the axle out and away from the spindle cone (**Figure 28**).

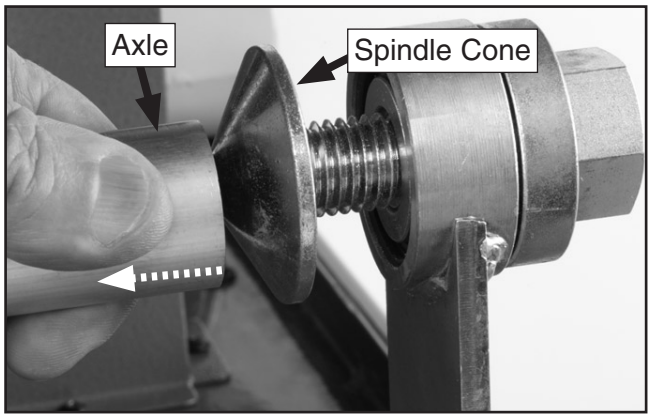


Figure 28. Removing supply axle.

4. Remove the spent filter tube, and slide the axle into the center of the new filter roll.

5. Orient the rolling-filter so when you look through the window and the filter paper is pulled up by the conveyor, the filter paper is next to the glass window. The filter paper should block the view of the roll as seen in **Figure 26**.

6. Install the axle and paper roll onto the spring loaded spindle.

7. Depress the spring-loaded spindle, swing the recovery axle out and away from the spindle cone, remove and discard the used filter roll (**Figure 29**).

Figure 29. Removing recovery axle.

8. Unwind approximately 15" of filter paper and fold approximately 6" over one of the conveyor ribs so when you push the manual feed button (**Figure 30**), the conveyor will draw the paper through the machine and into the recovery cabinet.

   Note: *For assistance, you can use a couple of pieces of tape to hold the filter paper on the conveyor.*

Figure 30. Supply cabinet manual feed button.

9. Remove the five Phillips head screws and the recovery cabinet shroud (**Figure 31**).

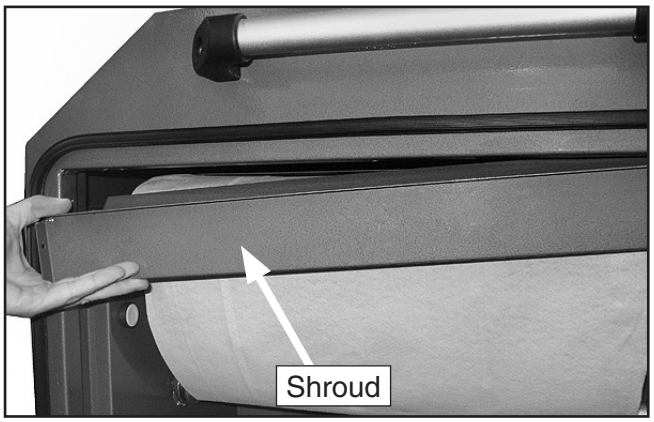


Figure 31. Recovery cabinet shroud.

10. Connect the machine to power, and push and hold the manual feed button while watching the progress of the filter paper as it passes through the machine.

11. When the filter paper just begins to enter at the top of the recovery cabinet, release the manual feed button and walk over to the recovery cabinet.

12. Remove the end of the filter paper from the conveyor, and then carefully pull the filter paper so approximately 15" of paper extends from the machine.

13. Place the end of the filter paper in the slot cut into the axle, and with your fingers, turn the axle toward you so you get a couple of wraps of paper on the roll (**Figure 32**).

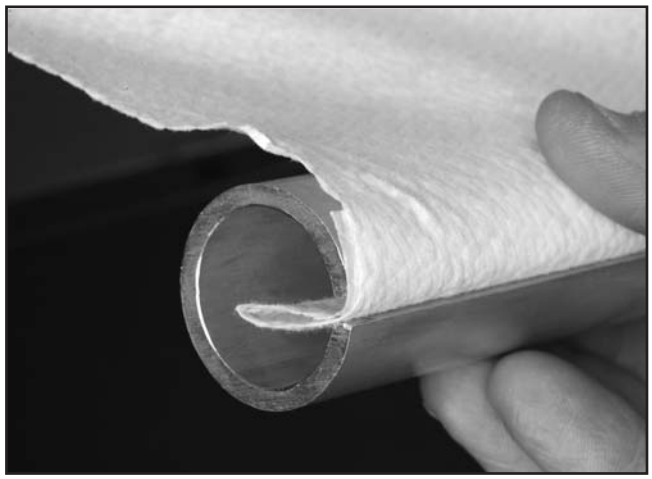


Figure 32. Wrapping the recovery axle.

Make sure that the roll is wrapped in the directio where, when installed, the filter paper blocks the view of the roll, as seen through the window shown in **Figure 27**.

14. Position the recovery axle onto the spring-loaded spindle cone so that the slot in the axle engages with the drive tang on the spindle cone (**Figure 33**).

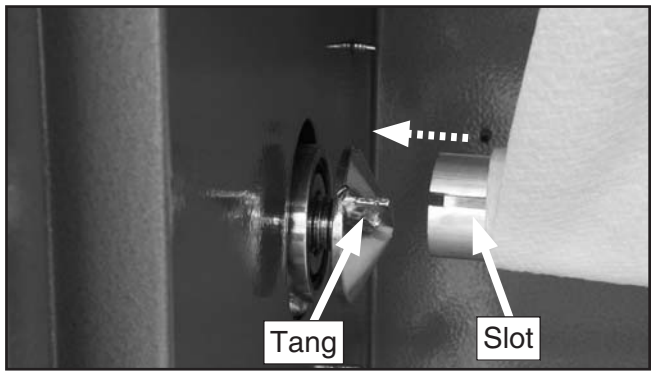


Figure 33. Slot and drive tang alignment.

15. Push the recovery cabinet manual feed button to draw up any slack in the filter paper between the two rolls.

16. Reinstall the recovery cabinet shroud.

Vibrating Filter (Manual Cleaning)

The vibrating filter collects 98% of the 1-micron particles. This filter rarely needs to be replaced if the machine is used properly and the filter is periodically removed and manually cleaned.

Tools Needed	Qty
Wrench 14mm	1
OSHA Approved Respirator	1
Safety Goggles	1
Air Compressor	1
Blowgun	1

To perform this procedure:

1. With the machine plugged in, press the manual cleaning mode and hold for a few seconds. The vibrating filter motor will operate, cleaning the vibrating filters.

2. DISCONNECT THE MACHINE FROM POWER, put on your respirator and safety goggles.

3. Unlatch the HEPA filter housing, open the housing, and lift the HEPA filter up and out of the housing (**Figure 34**).

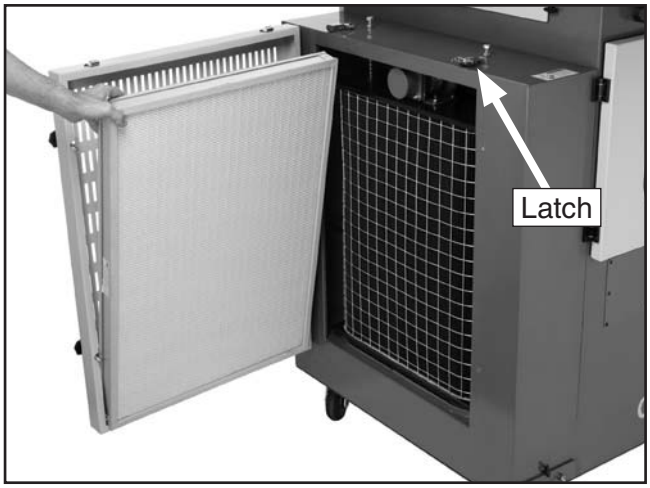


Figure 34. Removing HEPA filter housing.

4. Remove the plastic caps and loosen both jam nuts until they park against the underside of the spring retaining bolt heads (**Figure 35**).

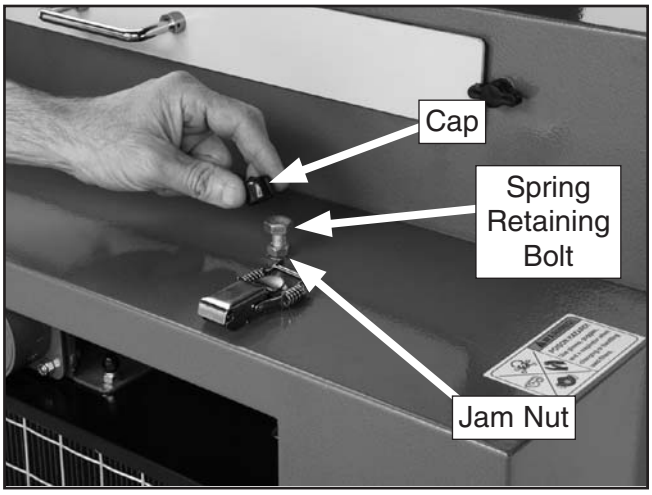


Figure 35. Vibrating filter retainer.

5. Using the 14mm wrench or a socket wrench, remove the right-side spring retaining bolt from the cabinet (**Figure 34**).

6. Reach into the cabinet, firmly grasp the right-side compression spring, and remove the spring (**Figure 36**). The spring is under tension, so make sure you do not lose your grip while you work the spring out of the cabinet.

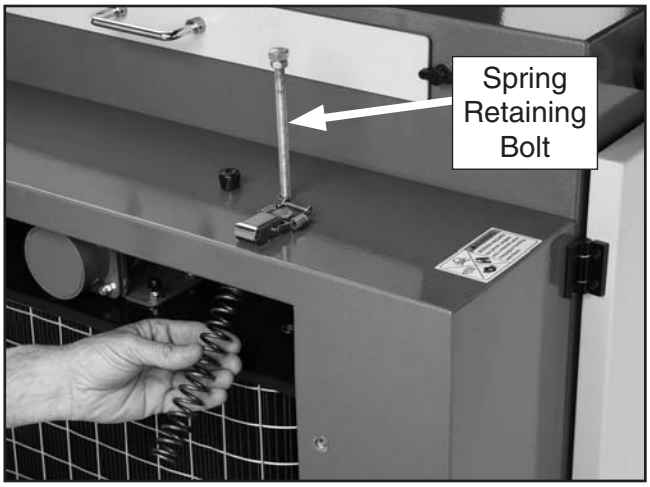


Figure 36. Vibration motor access.

7. Repeat **Steps 4–6** on the left-hand retaining bolt and spring.

8. Unplug the vibration motor, lift the vibrating filter upward and pull the bottom outward (**Figure 37**). Place the unit on the floor.

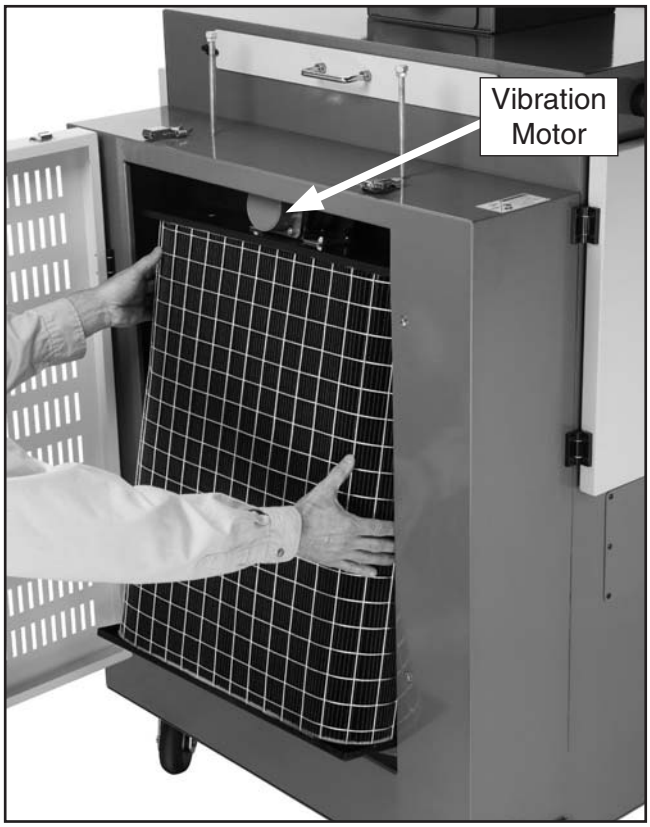


Figure 37. Vibrating filter removal.

9. Open the dust drawer and clean it out (**Figure 38**).

Figure 38. Dust drawer.

10. Using warm soapy water, wash out the filter cabinet and dust drawer, and allow them to air-dry.

11. Inspect for any seal or gasket damage and replace as required.

12. Make sure you are wearing your respirator and safety goggles.

13. Support the filter element and vacuum the input side of the filter with a soft brush-type tip while tapping the outside of the filter with your other hand.

14. When you have removed most of the caked contaminants, support the filter housing so it will not fall over during the next step.

15. Hold a shop air gun or spray nozzle no closer than two to three feet from the filter element, and in a slow and sweeping motion, blow the remaining contaminants back out the direction they came (**Figure 39**). Be careful, however, if you get too close, the air pressure may blow a hole in the filter.

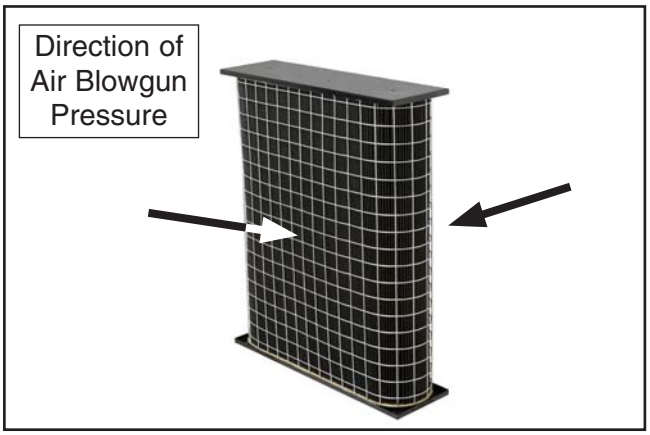


Figure 39. Vibrating filter element.

16. Place the vibrating filter into the cabinet.

17. Reinstall the spring retaining bolt so approximately 1" protrudes into the filter cabinet.

18. Grasp the spring and insert the top of it on the end of the retaining bolt that protrudes into the cabinet.

Note: *With the top of the spring being held in place by the end of this bolt, compressing and positioning the bottom of the spring into its seat is much easier.*

19. When the spring is installed, thread the retaining bolt by hand all the way down until it seats into the hole in the top of the vibrating filter and stops.

20. At this point, un-thread the retaining bolt approximately 1½" turns and lock the jam nut down against the cabinet so the bolt holds this position (**Figure 40**).

Note: *The clearance between the end of the bolt and its seat gives room for the filter to vibrate but not fall out of position.*

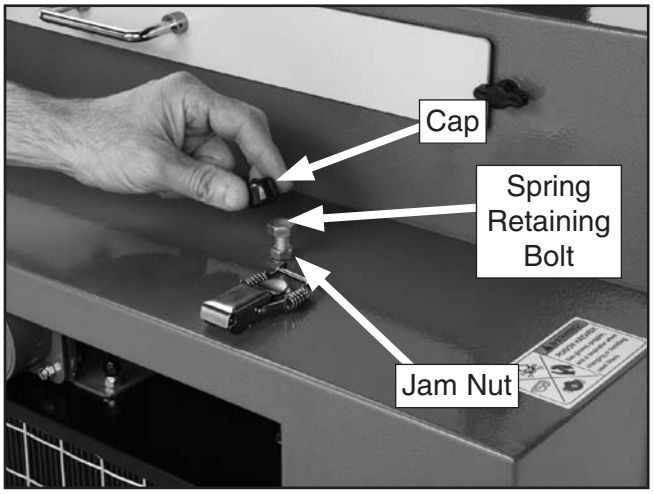


Figure 40. Vibrating filter retainer.

21. Place the cap onto the spring retaining bolt.

22. Clean or replace the HEPA filter as discussed on **Page 32**.

HEPA Filter (Manual Cleaning)

This HEPA filter removes 99.97% of the 0.3-micron particles. This filter rarely needs to be replaced if the machine is properly used and cleaned.

Tools Needed	Qty
OSHA Approved Respirator	1
Safety Goggles	1
Air Compressor	1
Blowgun	1

To clean the HEPA filter:

1. DISCONNECT THE MACHINE FROM POWER, put on your respirator, and empty the dust drawer.

2. Unscrew the lock knobs, unlatch the HEPA filter housing, then open the filter housing (**Figure 41**).

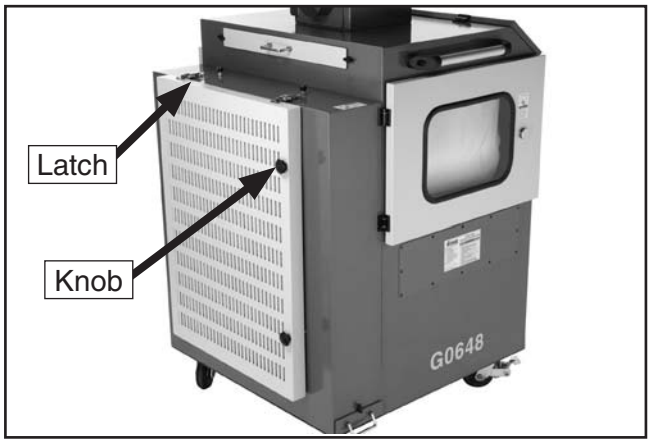


Figure 41. Removing HEPA filter housing.

3. Lift the HEPA filter from the filter housing (**Figure 42**).

   —If you are going to reuse the HEPA filter and it is not already marked with an airflow label like the one shown in **Figure 43**, use a permanent marking pen, and mark the top of the filter with an arrow indicating the direction of air flow.

   —If you are installing a new filter, also indicate the replacement date.

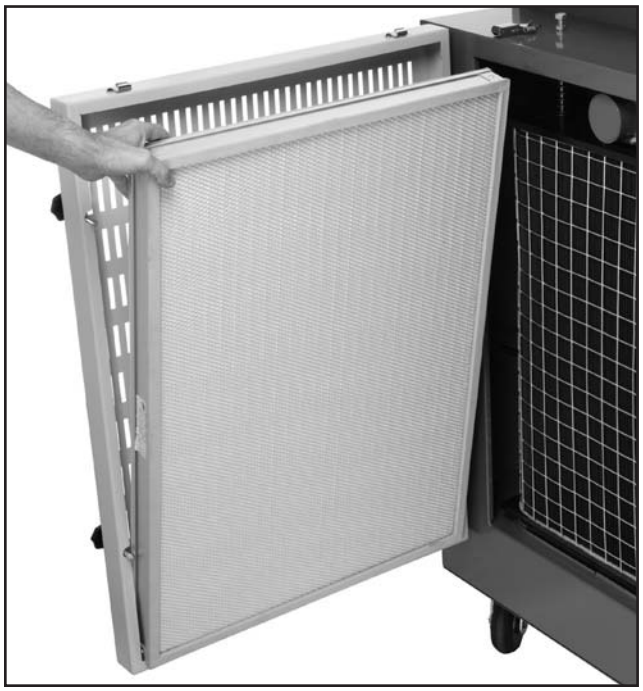


Figure 42. Removing HEPA filter.

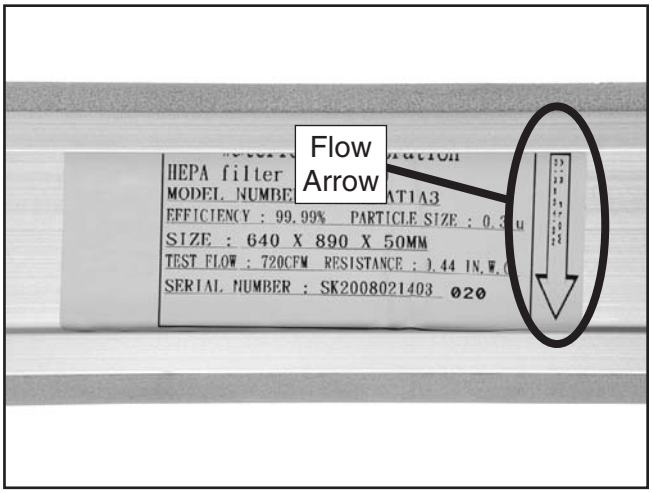


Figure 43. HEPA filter flow arrow.

4. Using warm soapy water, wash out the filter housing and allow it to air dry.

5. Make sure you are wearing your respirator and safety goggles.

6. Support the HEPA filter element and vacuum the input side of the filter with a soft brush-type tip while tapping the filter element.

7. Hold a shop air gun or spray nozzle no closer than two to three feet from the filter element, and in a slow and sweeping motion, blow the remaining contaminants back out the direction they came (against the direction of the arrow you previously marked). Be careful however, If you get too close the jet of air pressure may blow a hole in the filter.

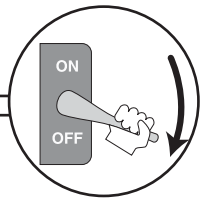
8. After cleaning, return the filter to the marked position in the filter housing.

9. Reassemble and start the machine.

SECTION 7: SERVICE

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

Troubleshooting



Motor and Electrical

Symptom	Possible Cause	Possible Solution
Machine will not start.	1. Emergency stop switch at fault. 2. Problem with 3-phase power supply. 3. Wiring at fault. 4. Circuit breaker/fuse has tripped. 5. Relay at fault. 6. Transformer at fault. 7. Control panel PC board at fault. 8. Motor at fault.	1. Reset or replace emergency stop switch. 2. Have electrician correct power supply problem. 3. Have repair for wiring problems. 4. Have electrician correct for short, and reset circuit breaker or replace fuse that has its failure LED illuminated. 5. Inspect and test relay replace as required. 6. Replace transformer. 7. Replace PC board. 8. Test and replace motor as required.
Vibrating motor function is inconsistent or inoperative.	1. Machine is not connected to power. 2. Capacitor is at fault. 3. Wiring at fault. 4. Circuit fuse has blown. 5. Transformer at fault. 6. Control panel PC board at fault. 7. Motor at fault.	1. Connect machine to power so the digital display is lights, then push and hold clean filter button. 2. Replace the capacitor. 3. Trace down wiring path and repair for damaged wiring or loose plugs. 4. Repair for short, and replace the fuse that has its failure LED illuminated. 5. Replace transformer. 6. Replace control panel PC board. 7. Test and replace motor as required.
Rolling filter or conveyor motor function is inconsistent or inoperative.	1. Machine is not connected to power. 2. Push button switch is at fault. 3. Capacitor is at fault. 4. Wiring at fault. 5. Circuit fuse has blown. 6. Control panel PC board at fault. 7. Transformer at fault. 8. Motor/motor PC board at fault.	1. Connect machine to power so the digital display is lights, then push and hold clean filter button. 2. Replace the push button switch for the motor. 3. Replace the capacitor. 4. Trace down wiring path and repair for damaged wiring or loose plugs. 5. Repair for short, and replace the fuse that has its failure LED illuminated. 6. Replace control panel PC board. 7. Replace transformer. 8. Replace motor/motor PC board as required.
Filter warning lamp/ buzzer engages but filter paper has not run out.	1. Infrared sensor is at fault. 2. Buzzer lamp is at fault. 3. Control panel PC board at fault.	1. Replace infrared sensor. 2. Replace buzzer lamp. 3. Replace control panel PC board.

Operation

Symptom	Possible Cause	Possible Solution
Suction CFM is lower than normal.	1. Blast gate is leaking or is not completely open. 2. Door or cabinet is at fault. 3. Ducting is at fault. 4. Slag screen is at fault. 5. Rolling filter is at fault. 6. Vibrating filter is at fault. 7. HEPA filter is at fault. 8. Fan system is at fault.	1. Make sure appropriate blast gate(s) are completely open and do not leak. 2. Make sure that all doors are closed seals do not leak. 3. Reduce length of ducting; maintain 6" diameter ducting; eliminate as many bends as possible; move downdraft table closer to fume extractor. 4. Remove slag drawer and clean slag screen. 5. Increase rolling-filter advance intervals to expose new filter paper more often to maintain CFM. 6. Manually clean the vibrating filter or replace. 7. Manually clean the HEPA filter or replace. 8. Fan motor has lost RPM, adjust/troubleshoot frequency drive and replace motor or frequency drive if required.
Filter warning lamp/ buzzer engages but filter paper has not run out.	1. Infrared sensor is at fault. 2. Circuit board is at fault.	1. Replace infrared sensor. 2. Replace circuit board.
High rolling-filter usage.	1. Incorrect machine usage. 2. Rolling filter advance timing at fault. 3. Workpiece is not properly prepared.	1. Eliminate idle time. Do not let machine run between welding jobs, shift changes, or breaks. 2. Clean all filters. Delay rolling-filter advance timing and/or decrease amount of new filter that is exposed during advance cycles. 3. Reduce smoke and fumes. Grind, scrape, strip or sandblast away workpiece coatings to a minimum of 4" away from location to be heated.

SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Study this diagram carefully. If you notice differences between your machine and these wiring diagrams, call Technical Support at (570) 546-9663 for assistance.

⚠WARNING
Electrical Safety Instructions

1. **SHOCK HAZARD.** Disconnect the power from the machine before servicing electrical components. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death.

2. **CIRCUIT REQUIREMENTS.** You MUST follow the **CIRCUIT REQUIREMENTS** section on **Page 10**. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

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

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

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

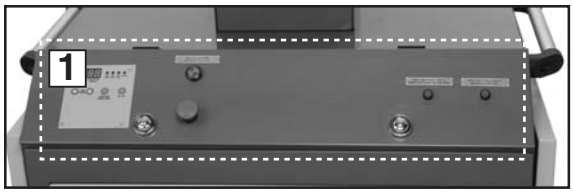
NOTICE
The photos and diagrams included in this section are best viewed in color. You can view these pages in color at *www.grizzly.com.*

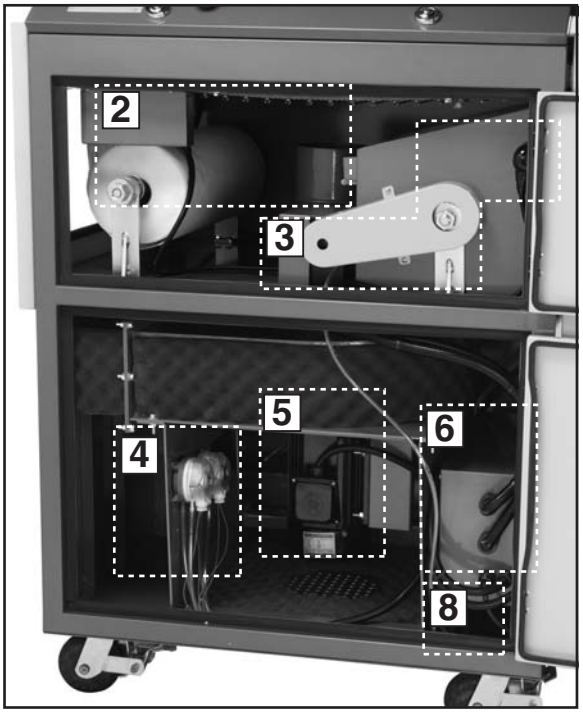
NOTICE
This machine uses sensitive electronics that rely on stable current on all power supply legs. We do not recommend connecting this machine to a phase converter. Ignoring this notice may void warranty.

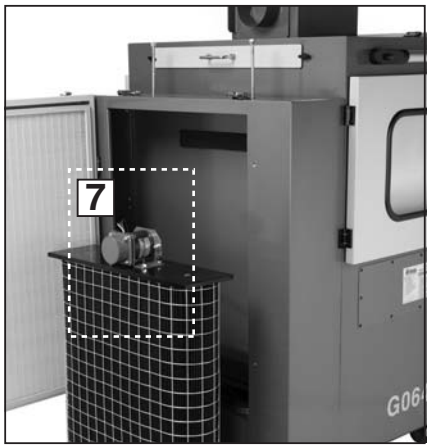
COLOR KEY

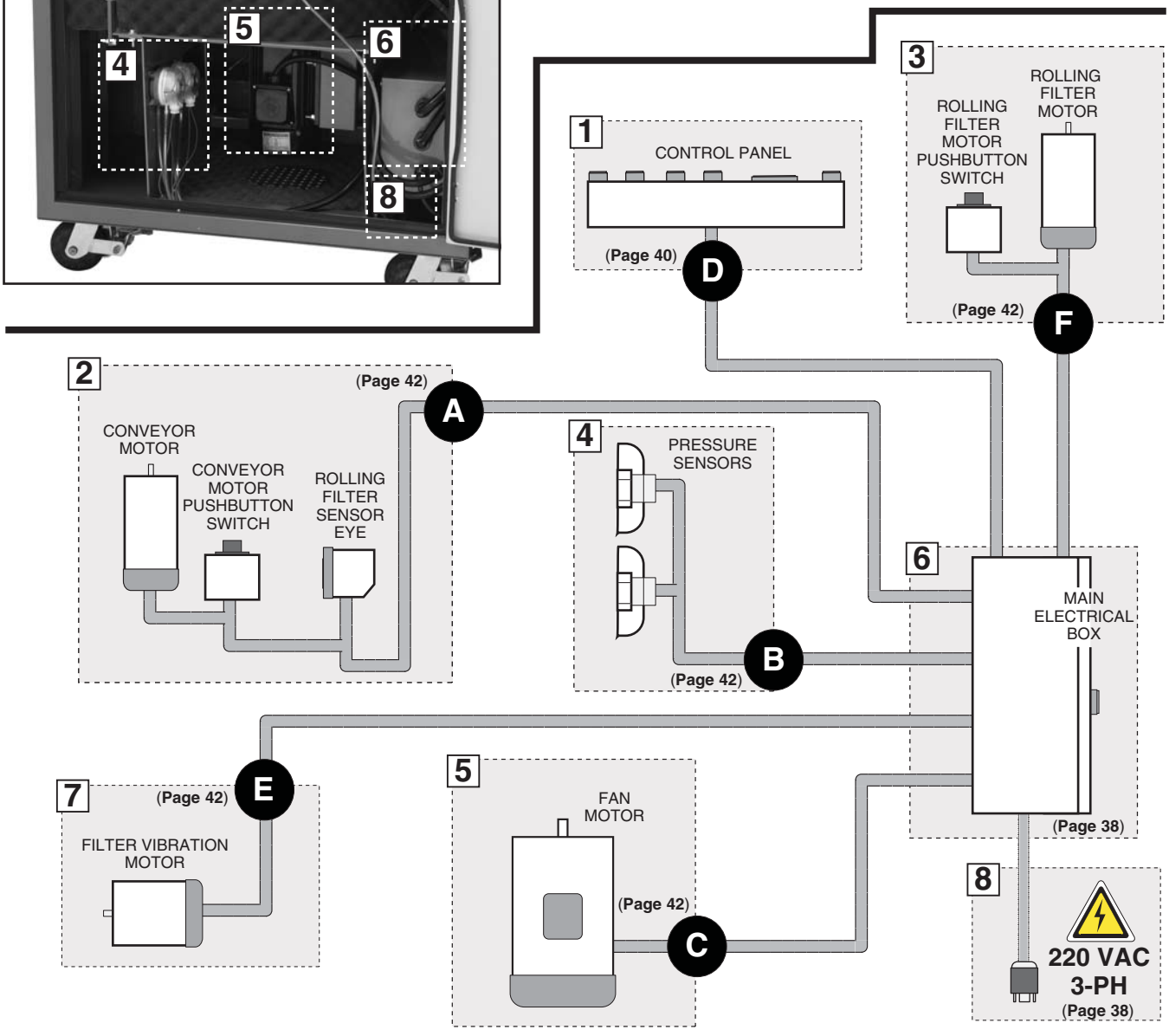
BLACK	Bk
WHITE	Wt
GREEN	Gn
RED	Rd
YELLOW	Yl
BLUE	Bl
BROWN	Br
GRAY	Gy
GRN/YLW	Yg
ORANGE	Or

Wiring Overview

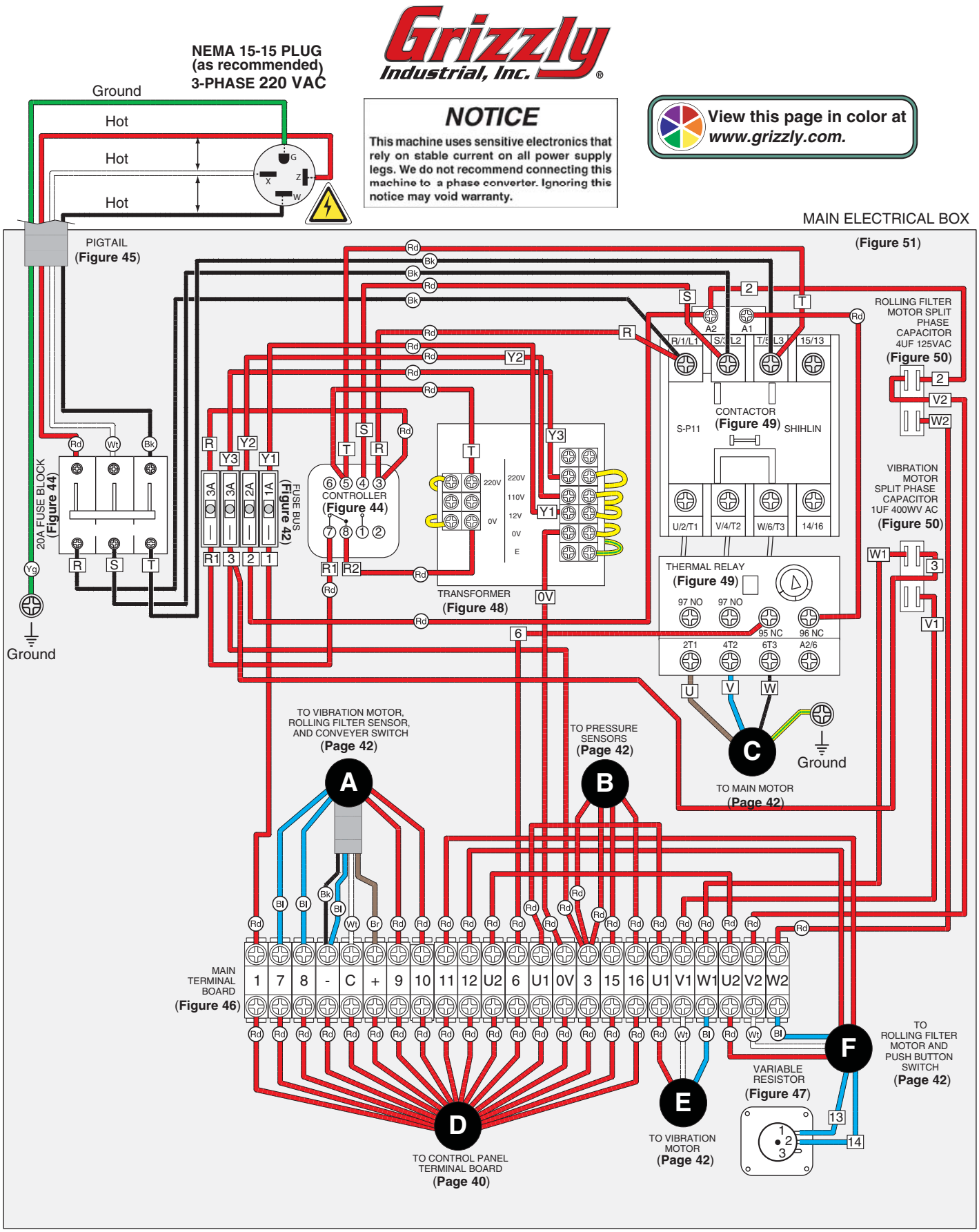








Main Electrical Box Wiring



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Main Electrical Box Components

Figure 44. Input relay, fuse bus, phase controller.

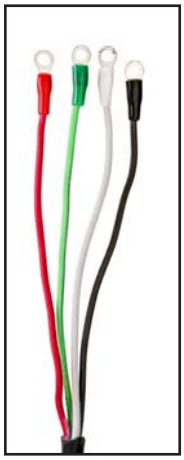

Figure 45. Pigtail.

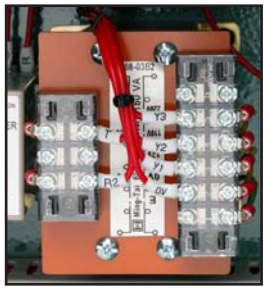

Figure 48. Transformer.

Figure 49. Contactor and thermal relay.

Figure 50. Split phase capacitors.

Figure 46. Main terminal block.

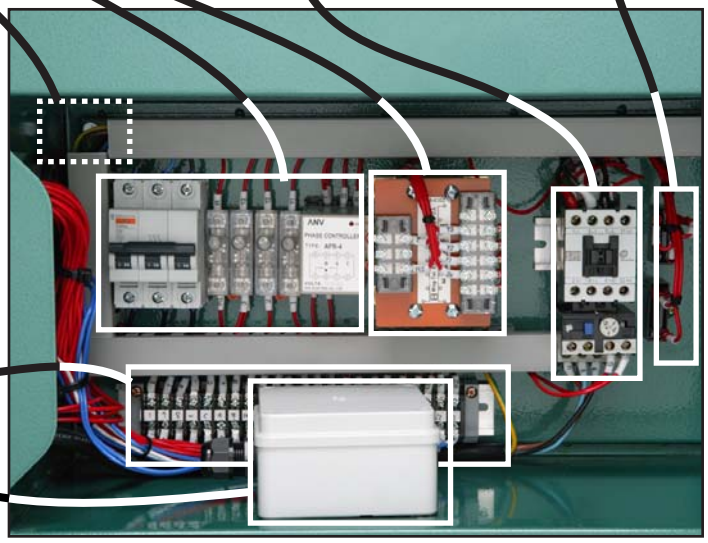

Figure 51. Main electrical box.

Figure 47. Rheostat.

Control Panel Wiring

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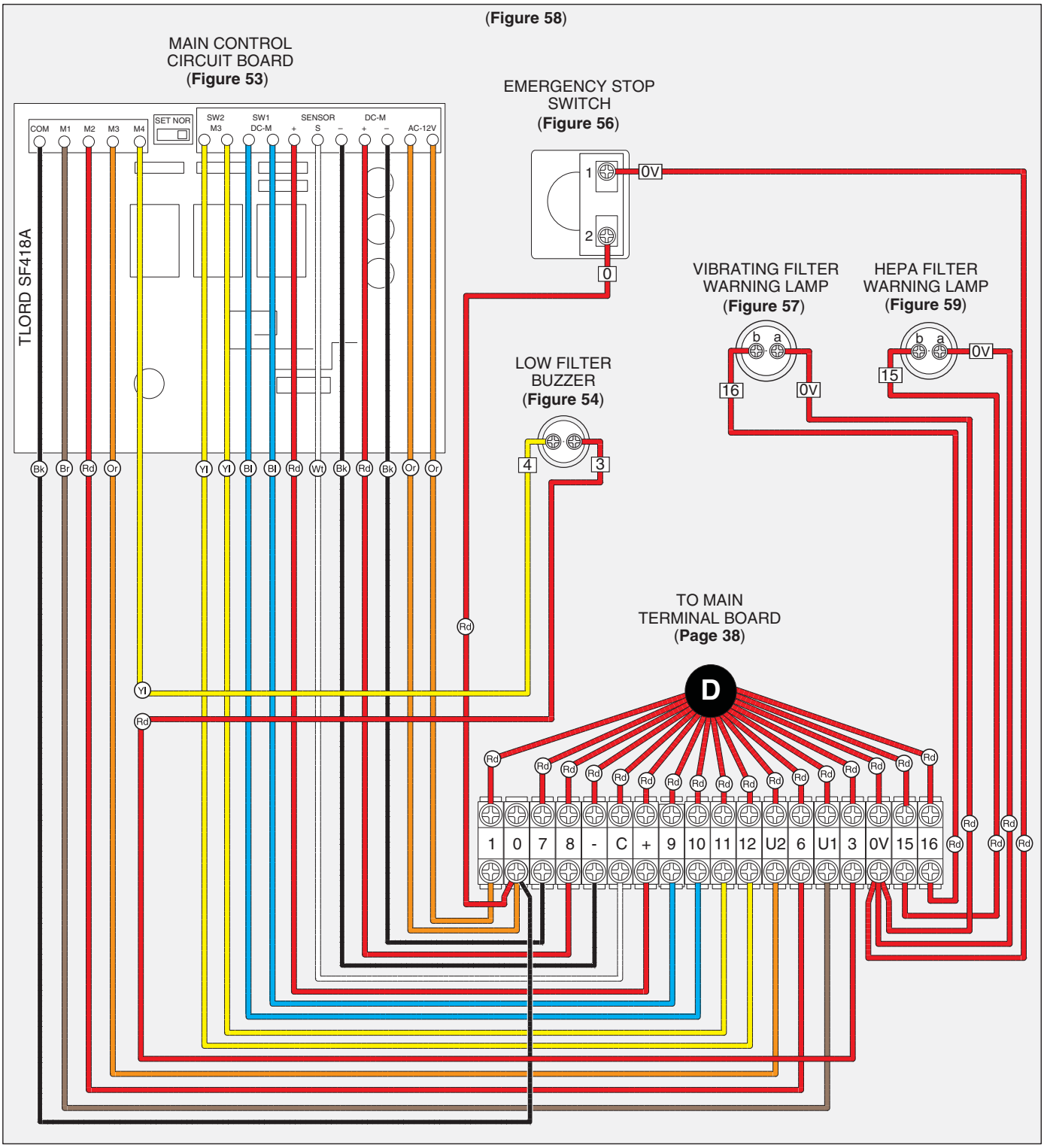

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Control Panel Electrical Components

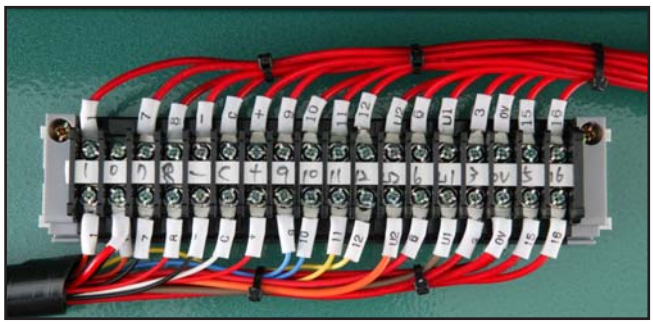

Figure 55. Control panel terminal block.

Figure 52. NOR/SET control.

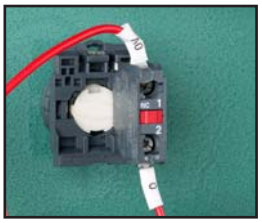

Figure 56. Emergency stop switch.

Figure 57. Vibrating filter lamp.

Figure 59. HEPA filter lamp.

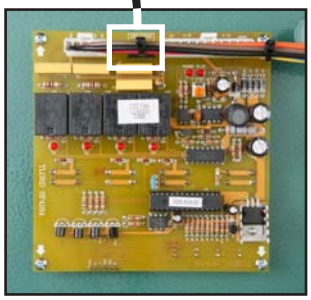

Figure 53. Digital control panel circuit board.

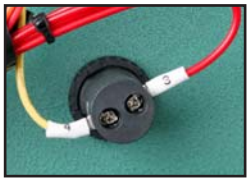

Figure 54. Filter warning buzzer.

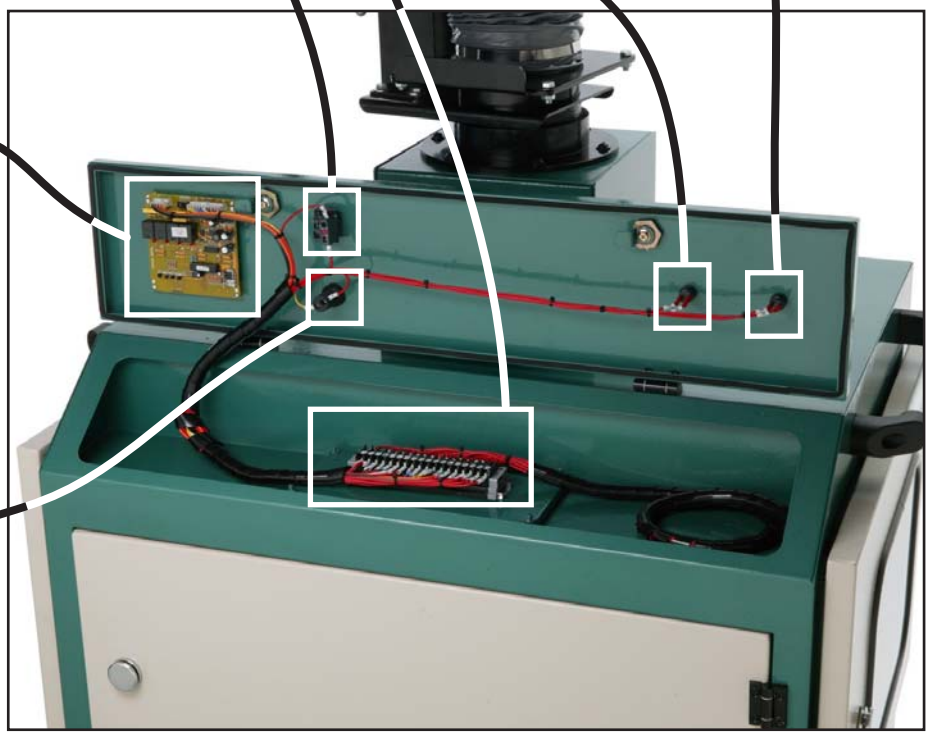

Figure 58. Control box.

Cabinet Wiring

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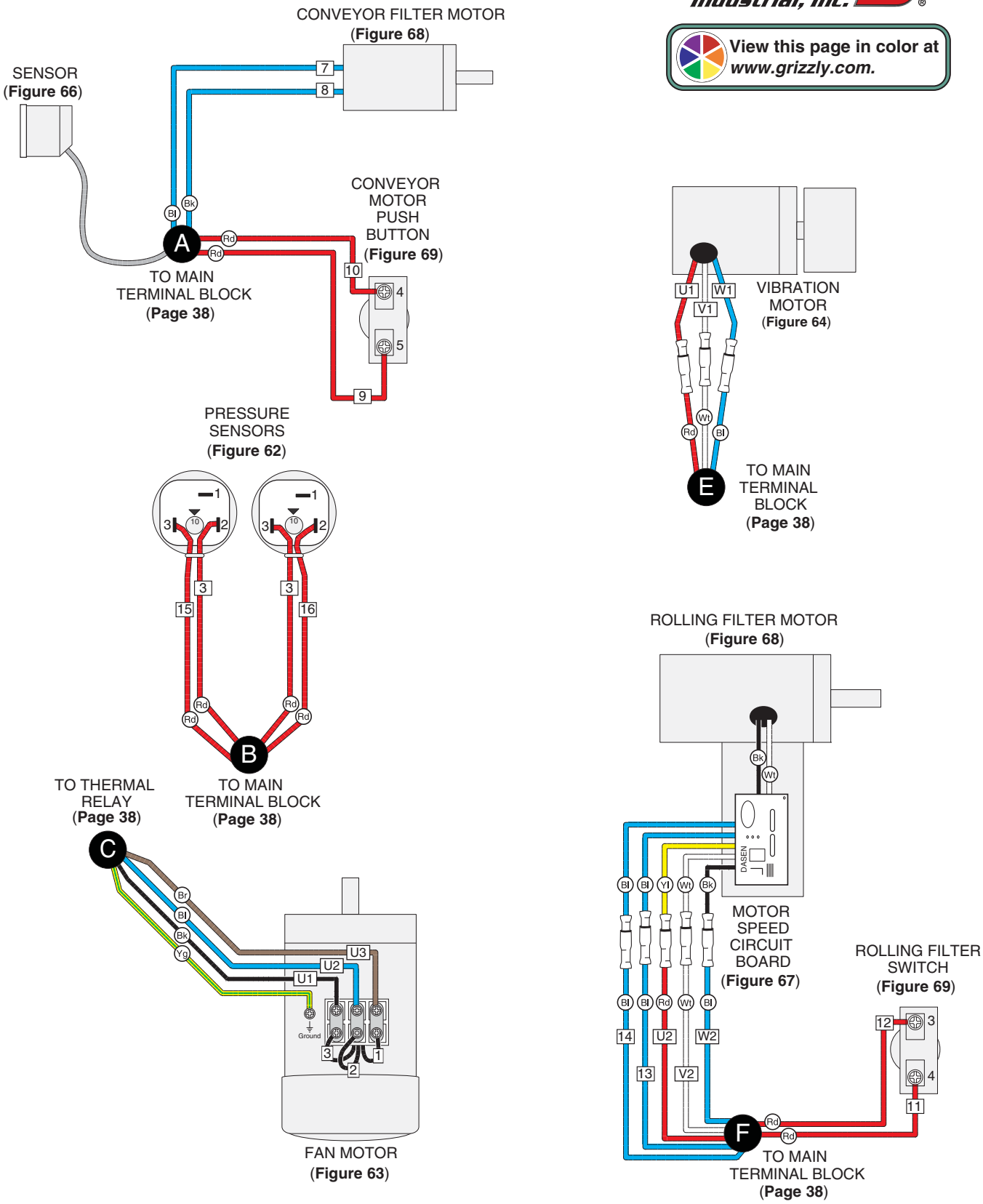

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Cabinet Electrical Components

Figure 60.
Vibrating filter.

Figure 64. Vibrating filter motor.

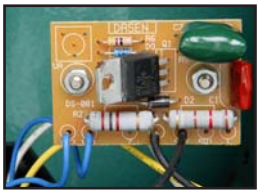

Figure 67. Rolling filter motor circuit board.

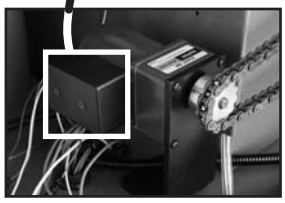

Figure 68. Rolling filter motor.

Figure 65.
Conveyor switch.

Figure 66.
Electric eye.

Figure 69.
Rolling filter switch.

Figure 61.
Conveyor motor.

Figure 62.
Pressure sensors.

Figure 63.
Fan motor.

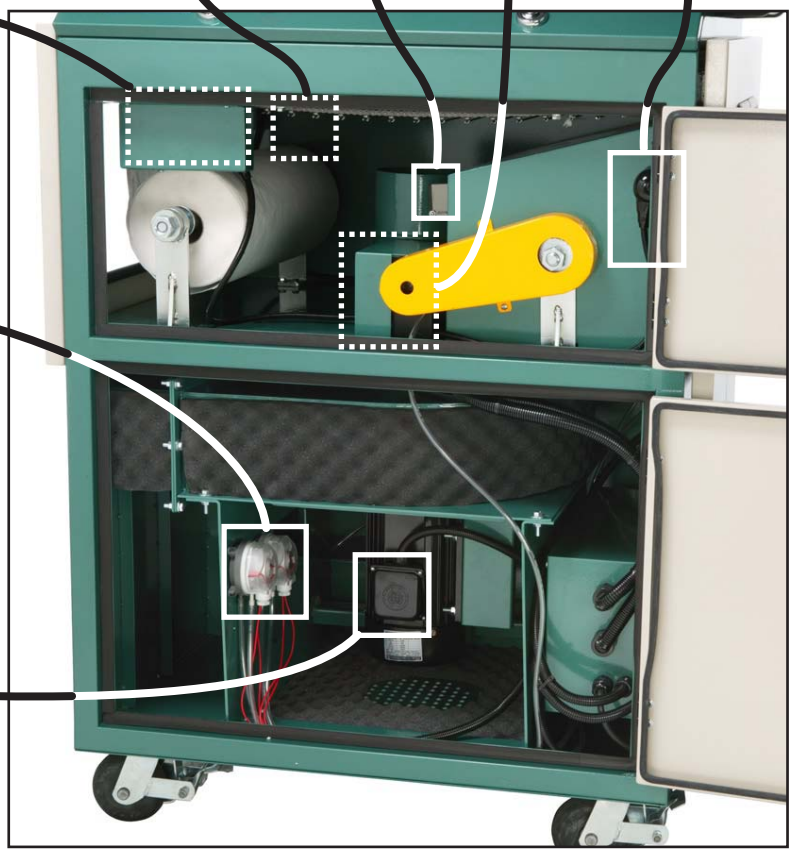

Figure 70. Cabinet components.

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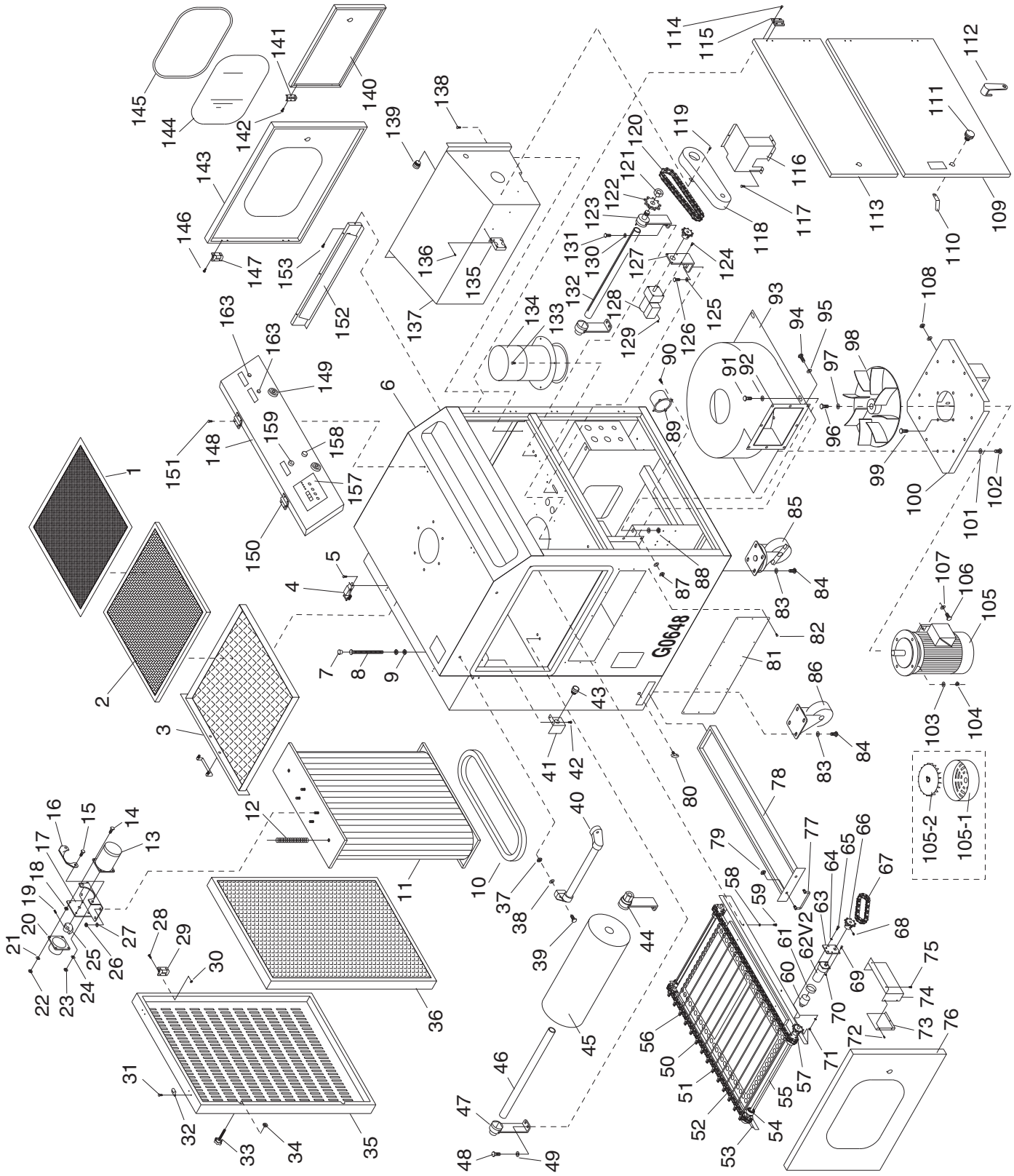
SECTION 9: PARTS

Main Parts Breakdown



Parts List

REF	PART #	DESCRIPTION
1	P0648001	STAINLESS SCREEN
2	P0648002	ALUMINUM MESH 555 X 555 X 22MM
3	P0648003	DRAWER
4	P0648004	SPRING BUCKLE LATCH
5	PHTEK23	TAP SCREW #10 X 1/2
6	P0648006	CABINET
7	P0648007	PLASTIC CAP
8	P0648008	SPECIAL RETAINING BOLT 3/8"-16
9	PN08	HEX NUT 3/8-16
10	P0648010	OVAL SEAL
11	P0648011	PLEATED FILTER 600 X 170 X 730MM
12	P0648012	COMPRESSION SPRING
13	P0648013	VIBRATION MOTOR 220V
14	PB26	HEX BOLT 1/4-20 X 1-1/2
15	PB07	HEX BOLT 5/16-18 X 3/4
16	P0648016	VIBRATION MOTOR BASE A
17	P0648017	VIBRATION MOTOR BASE B
18	PN05	HEX NUT 1/4-20
19	P0648019	SPECIAL SCREW 1/4"-24 1/4
20	P0648020	COVER
21	PW06	FLAT WASHER 1/4
22	PLN02	LOCK NUT 1/4-20
23	PLN03	LOCK NUT 5/16-18
24	PW07	FLAT WASHER 5/16
25	P0648025	ECCENTRIC WHEEL
26	PLN03	LOCK NUT 5/16-18
27	PW07	FLAT WASHER 5/16
28	P0648028	SPECIAL HEX BOLT M5-1.5 X 10
29	P0648029	HINGE
30	PN06M	HEX NUT M5-.8
31	PHTEK23	TAP SCREW #10 X 1/2
32	P0648032	SPRING BUCKLE
33	P0648033	KNOB
34	PN02	HEX NUT 5/16-18
35	P0648035	HEPA FRAME
36	P0648036	HEPA FILTER 640 X 890 X 50MM
37	PN02M	HEX NUT M10-1.5
38	PW02	FLAT WASHER 3/8
39	P0648039	SPECIAL HEX BOLT M10-1.5 X 50
40	P0648040	ALUMINUM HANDLE 400MM
41	P0648041	ROLLING FILTER SWITCH BASE
42	PHTEK8	TAP SCREW #8 X 1/2
43	P0648043	ROLLING FILTER SWITCH
44	P0648044	FIXED BEARING BASE
45	P0648045	ROLLING FILTER
46	P0648046	SUPPLY AXLE
47	P0648047	SPRING-LOADED BEARING BASE
48	PB07	HEX BOLT 5/16-18 X 3/4
49	PW07	FLAT WASHER 5/16
50	PS23	PHLP HD SCR #8-32 X 1/4

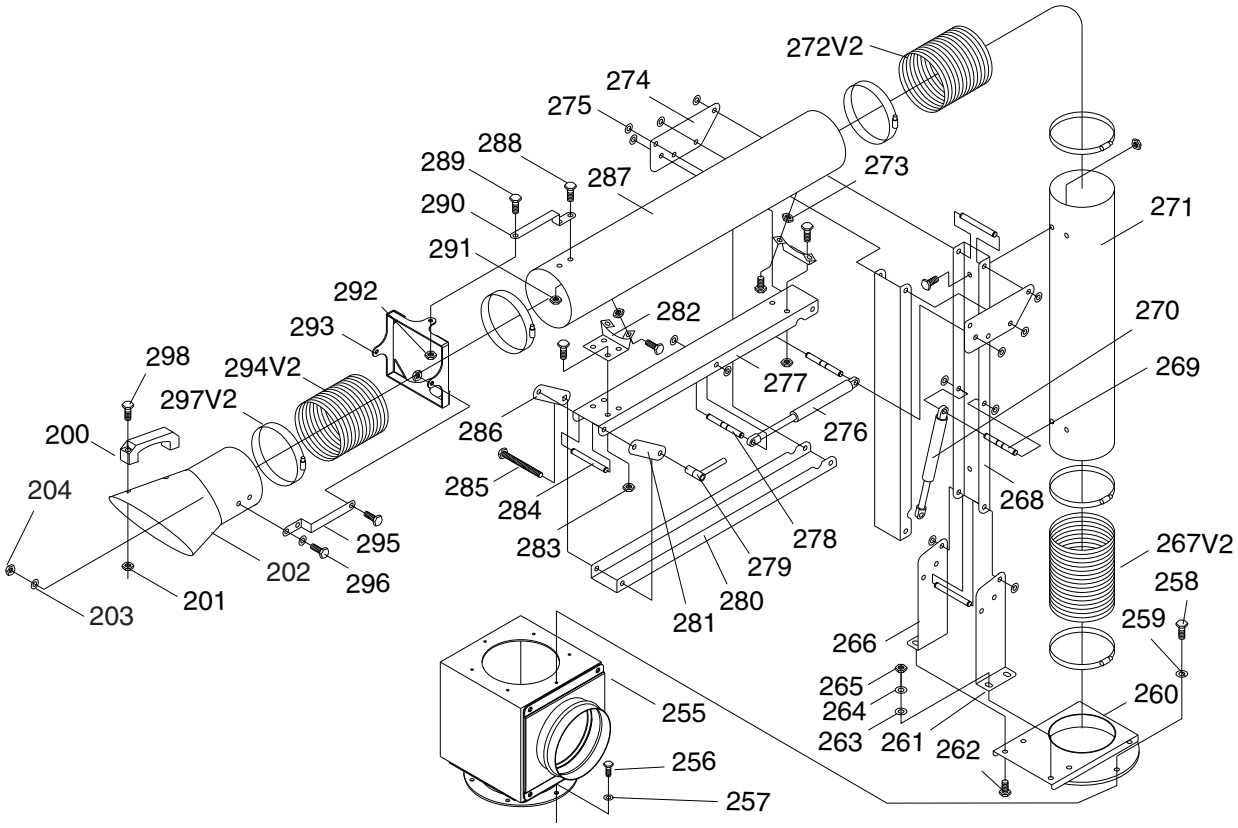
REF	PART #	DESCRIPTION
51	P0648051	CONVEYOR ROD
52	P0648052	TRANSMISSION CHAIN
53	P0648053	GUIDE RAIL
54	P3200RS	BALL BEARING 3200RS
55	P0648055	CONVEYOR IDLER SHAFT
56	P0648056	INSULATED END
57	P0648057	GEAR 9T
58	PW07	FLAT WASHER 5/16
59	PB07	HEX BOLT 5/16-18 X 3/4
60	P0648060	COVER
61	P0648061	STEEL CLAMP
62V2	P0648062V2	MOTOR 12V V2.15.08
63	P0648063	MOTOR BASE
64	PW06	FLAT WASHER 1/4
65	PB05	HEX BOLT 1/4-20 X 3/4
66	P0648066	GEAR 9T
67	P0648067	CHAIN
68	P0648068	SPECIAL SCREW M6-1 X 6
69	P0648069	SPECIAL BOLT #6-32 X 1
70	PN12	HEX NUT #6-32
71	PN05	HEX NUT 1/4-20
72	PS01	PHLP HD SCR #10-24 X 1/2
73	P0648073	CHAIN HOUSING A
74	P0648074	CHAIN HOUSING B
75	PHTEK8	TAP SCREW #8 X 1/2
76	P0648076	LEFT SIDE DOOR
77	P0648077	HANDLE
78	P0648078	DUST PAN
79	PN02	HEX NUT 5/16-18
80	P0648080	WING SCREW
81	P0648081	SEAL BOARD
82	PHTEK8	TAP SCREW #8 X 1/2
83	PW07	FLAT WASHER 5/16
84	PB07	HEX BOLT 5/16-18 X 3/4
85	P0648085	CASTER W/BRAKE
86	P0648086	CASTER W/O BRAKE
87	PN02	HEX NUT 5/16-18
88	PN08	HEX NUT 3/8-16
89	P0648089	PRESSURE GAUGE
90	PHTEK8	TAP SCREW #8 X 1/2
91	PN08	HEX NUT 3/8-16
92	PW02	FLAT WASHER 3/8
93	P0648093	BLOWER
94	PB07	HEX BOLT 5/16-18 X 3/4
95	PW07	FLAT WASHER 5/16
96	PB18	HEX BOLT 3/8-16 X 1
97	P0648097	SPECIAL WASHER
98	P0648098	IMPELLER 14.5"DIAMETER
99	PB24	HEX BOLT 3/8-16 X 1-1/4

Parts List

REF	PART #	DESCRIPTION
100	P0648100	MOTOR BASE
101	PB07	HEX BOLT 5/16-18 X 3/4
102	PW07	FLAT WASHER 5/16
103	PW02	FLAT WASHER 3/8
104	PN08	HEX NUT 3/8-16
105	P0648105	MOTOR 2HP 220V 3PH
105-1	P0648105-1	FAN COVER
105-2	P0648105-2	MOTOR FAN
106	PN08	HEX NUT 3/8-16
107	PW02	FLAT WASHER 3/8
108	PN08	HEX NUT 3/8-16
109	P0648109	LOWER FRONT DOOR
110	P0648110	HANDLE ROTATION PLATE
111	P0648111	WATERPROOF SWITCH
112	P0648112	SWITCH HANDLE
113	P0648113	UPPER FRONT DOOR
114	P0648114	SPECIAL HEX BOLT M5-.8 X 10
115	P0648115	HINGE
116	P0648116	COVER
117	PS17	PHLP HD SCR #8-32 X 1/2
118	P0648118	CHAIN HOUSING C
119	PS01	PHLP HD SCR #10-24 X 1/2
120	P0648120	CHAIN
121	PN17	HEX NUT 3/4-10
122	P0648122	GEAR 21T
123	P0648123	GEARED BEARING BASE
124	PS64M	PHLP HD SCR M4-.7 X 65
125	PW07	FLAT WASHER 5/16
126	PB07	HEX BOLT 5/16-18 X 3/4
127	P0648127	BASE

REF	PART #	DESCRIPTION
128	P0648128	REDUCER
129	PFN07M	FLANGE NUT M4-.7
130	PW07	FLAT WASHER 5/16
131	PB07	HEX BOLT 5/16-18 X 3/4
132	P0648132	RECOVERY AXLE
133	PHTEK8	TAP SCREW #8 X 1/2
134	P0648134	PIPE
135	P0648135	SENSOR EYE
136	PS01	PHLP HD SCR #10 X 1/2
137	P0648137	RECOVERY BOX
138	PHTEK8	TAP SCREW #8 X 1/2
139	P0648139	CONVEYOR SWITCH
140	P0648140	ELECTRICAL BOX DOOR
141	P0648141	HINGE
142	PHTEK23	TAP SCREW #10 X 1/2
143	P0648143	RIGHT DOOR
144	P0648144	GLASS WINDOW 621.2 X 406.8MM
145	P0648145	GLASS SEAL 2060MM
146	P0648146	SPECIAL SCREW M5-.8 X 10
147	P0648147	HINGE
148	P0648148	CONTROL PANEL
149	P0648149	CONTROL PANEL LOCK
150	P0648150	HINGE
151	P0648151	SPECIAL HEX BOLT M5-.8 X 10
152	P0648152	COVER BOARD
153	PHTEK23	TAP SCREW #8 X 1/2
157	P0648157	DIGITAL CONTROL PANEL
158	P0648158	EMERGENCY STOP SWITCH
159	P0648159	BUZZER
163	P0648163	WARNING LAMP

Blast Gates and Ducting Arm Breakdown

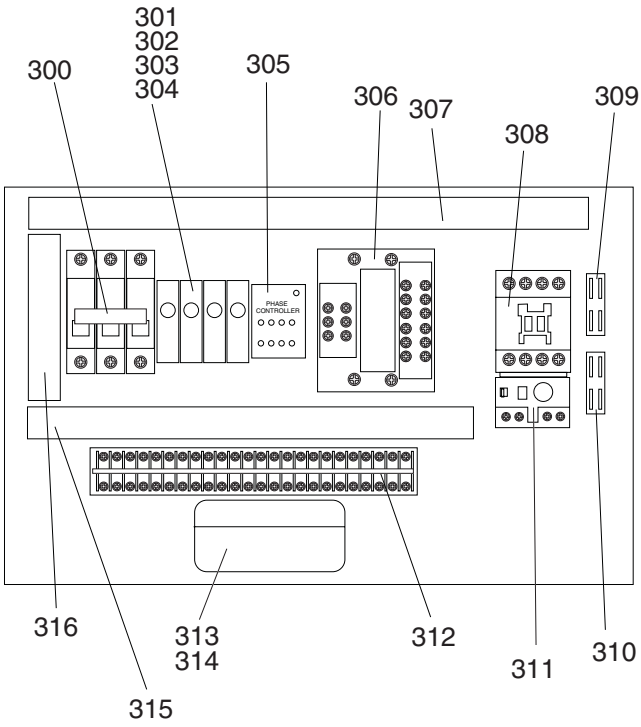


Parts List

REF	PART #	DESCRIPTION
200	P0648200	HANDLE
201	PN02	HEX NUT 5/16-18
202	P0648202	HOOD
203	PW07	FLAT WASHER 5/16
204	PN02	HEX NUT 5/16-18
255	P0648255	CONNECTOR
256	PB18	HEX BOLT 3/8-16 X 1
257	PW02	FLAT WASHER 3/8
258	PB18	HEX BOLT 3/8-16 X 1
259	PW02	FLAT WASHER 3/8
260	P0648260	BASE
261	P0648261	ROTATION PLATE A
262	PB18	HEX BOLT 3/8-16 X 1
263	PW02	FLAT WASHER 3/8
264	PLW04	LOCK WASHER 3/8
265	PN08	HEX NUT 3/8-16
266	P0648266	ROTATION PLATE B
267V2	P0648267V2	NYLON DUCT 6" X (25 RINGS) V2.15.08
268	P0648268	EXTENSION ARM
269	P0648269	SUPPORT PIN A
270	P0648270	GAS SPRING B
271	P0648271	LOWER PIPE
272V2	P0648272V2	NYLON HOSE 6" X (34 RINGS) V2.15.08
273	PN02	HEX NUT 5/16-18
274	P0648274	MIDDLE ROTATION PLATE

REF	PART #	DESCRIPTION
275	P0648275	BUCKLE
276	P0648276	GAS SPRING A
277	P0648277	EXTENSION ARM SUPPORT
278	P0648278	SUPPORT PIN
279	P0648279	HANDLE
280	P0648280	ROTATION SHAFT C
281	P0648281	UPPER LEFT ROTATION PLATE
282	P0648282	PIPE SUPPORT BASE
283	PN02	HEX NUT 5/16-18
284	P0648284	ROTATION AXLE A
285	P0648285	SPECIAL SCREW 3/8"-18 X 4"
286	P0648286	UPPER RIGHT ROTATION PLATE
287	P0648287	UPPER PIPE
288	PB07	HEX BOLT 5/16-18 X 3/4
289	PB21	HEX BOLT 3/8-16 X 3/4
290	P0648290	ROTATION PLATE
291	PN02	HEX NUT 5/16-18
292	PN08	HEX NUT 3/8-16
293	P0648293	COLLECTOR BRACKET
294V2	P0648294V2	NYLON DUCT 6" X (25 RINGS) V2.15.08
295	P0648295	SUPPORT
296	PHTEK11	TAP SCREW #8 X 3/4
297V2	P0648297V2	HOSE CLAMP 6-1/2" V2.15.08
298	P0648298	INNER HEX SCREW 5/16-18 X 1

Main Electrical Box

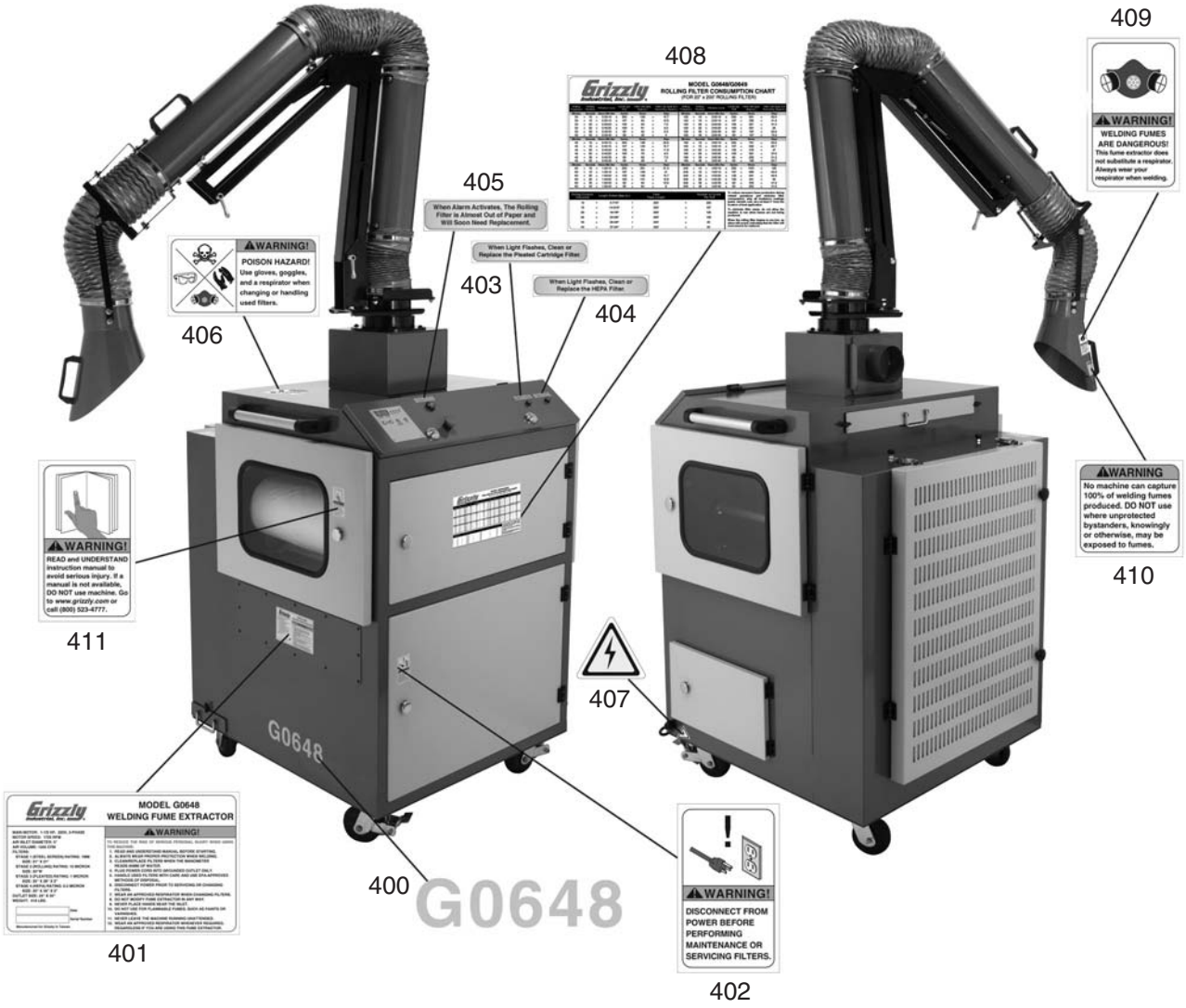


Parts List

REF	PART #	DESCRIPTION
300	P0648300	CIRCUIT BREAKER ASSEMBLY
301	P0648301	FUSE HOUSING
302	P0648302	FUSE 1AMP
303	P0648303	FUSE 2AMP
304	P0648304	FUSE 3AMP
305	P0648305	PHASE CONTROLLER APR-4 220VAC
306	P0648306	TRANSFORMER 220V
307	P0648307	UPPER COVER
308	P0648308	CONTACTOR SHIHLIN S-P11 220V

REF	PART #	DESCRIPTION
309	P0648309	SPLIT PHASE CAPACITOR 4UF 125VAC
310	P0648310	SPLIT PHASE CAPACITOR 1UF 400WV AC
311	P0648311	RELAY SHIHLIN TH-P12 5-8A 220V
312	P0648312	TERMINAL BOARD
313	P0648313	SPEED CONTROL RHEOSTAT
314	P0648314	RHEOSTAT BOX
315	P0648315	LOWER COVER
316	P0648316	LEFT COVER

Label Placement



Parts List

REF	PART #	DESCRIPTION
400	P0648400	MACHINE ID LABEL
401	P0648401	MODEL ID LABEL
402	PLABEL-63	DISCONNECT POWER LABEL
403	P0648403	CHANGE PLEATED FILTER LABEL
404	P0648404	CHANGE HEPA FILTER LABEL
405	P0648405	CHANGE ROLLING FILTER LABEL

REF	PART #	DESCRIPTION
406	P0648406	POISON WARNING LABEL
407	PLABEL-14	ELECTRICITY LABEL
408	P0648408	MAGNETIC FILTER TIME CHART
409	PLABEL-61	RESPIRATOR LABEL
410	P0648410	WELDING WARNING LABEL
411	PLABEL-12A	READ MANUAL LABEL

⚠WARNING

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

Notes

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

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

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

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

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

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

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

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

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

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

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

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

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

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

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

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

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

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

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

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

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

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