

Grizzly **Industrial, Inc.**®

MODEL G5954 5 HP DUST COLLECTOR OWNER'S MANUAL



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**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE
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#JK8167 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 G5954 5HP Dust Collector. This machine is part of a growing Grizzly family of fine woodworking 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.

We are pleased to provide this manual with the Model G5954. It was written to guide you through assembly, review safety considerations, and cover general operating procedures. It represents our effort to produce the best documentation possible.

The specifications, drawings, and photographs illustrated in this manual represent the Model G5954 as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

Contact Info

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

Grizzly Industrial, Inc.
c/o Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069

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

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





MACHINE DATA SHEET

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

MODEL G5954 5 HP INDUSTRIAL DUST COLLECTOR

Product Dimensions:

Weight..... 320 lbs.
 Length/Width/Height..... 51-3/8 x 48 x 136 in.
 Foot Print (Length/Width)..... 29 x 23 in.

Shipping Dimensions:

Type..... Cardboard/Wood Frame
 Content..... Machine
 Weight..... 366 lbs.
 Length/Width/Height..... 30 x 55 x 31 in.

Electrical:

Switch..... Magnetic with Thermal Overload Protector
 Switch Voltage..... 220V
 Cord Length..... 10 ft.
 Cord Gauge..... 12 gauge
 Recommended Breaker Size..... 40 amp
 Plug..... No

Motors:

Main

Type..... TEFC Capacitor Start Induction
 Horsepower..... 5 HP
 Voltage..... 220V
 Prewired..... 220V
 Phase..... Single
 Amps..... 34A
 Speed..... 3450 RPM
 Cycle..... 60 Hz
 Number Of Speeds..... 1
 Power Transfer Direct Drive
 Bearings..... Shielded and Permanently Lubricated

Main Specifications:

Operation

Air Suction Cap..... 3184 CFM
 Static Pressure at Rated CFM..... 17 in.
 Main Inlet Size..... 9 in.
 Manifold Included..... Yes
 Manifold Inlets..... 4
 Manifold Inlet Size..... 4 in.
 Machine Collection Cap..... Minimum 4 Machines
 Maximum Material Collection Cap..... 29.5 cu. ft.
 Upper Bag Filtration..... 2.5 micron

The information contained herein is deemed accurate as of 5/11/2006 and represents our most recent product specifications. Due to our ongoing improvement efforts, this information may not accurately describe items previously purchased.



Bag Information

No Of Upper Bags.....	2
Upper Bag Cap.....	21.9 cu. ft.
Lower Bag Cap.....	14.8 cu. ft.
No Of Lower Bags.....	2
Upper Bags Total Area.....	43.7 cu. ft.
Lower Bags Total Area.....	29.5 cu. ft.
Upper Bag Diameter.....	25 in.
Upper Bag Length.....	77 in.
Lower Bag Diameter.....	25 in.
Lower Bag Length.....	52 in.

Impellar Information

Impeller Type.....	Radial Fin
Impeller Size.....	13 in.
Impeller Blade Thickness.....	3/32 in.

Construction

Upper Bag Material.....	Fabric
Lower Bag Material.....	Plastic
Base Construction.....	Pre-Formed Steel on Casters
Frame Construction.....	Formed Steel
Caster Construction.....	Four Plastic
Impeller Construction.....	Welded Steel
Paint.....	Powder Coated

Other

Height With Bags Inflated.....	136 in.
--------------------------------	---------

Other Specifications:

ISO Factory	ISO 9001
Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	Machine Label Above Magnetic On/Off Switch
Assembly Time	1 hour
Sound Rating	80 - 90 dB

Features:

- Handles Four Machines Simultaneously
- Detachable Base
- Includes Steel Base with Casters

*The information contained herein is deemed accurate as of 5/11/2006 and represents our most recent product specifications
Due to our ongoing improvement efforts, this information may not accurately describe items previously purchased.*



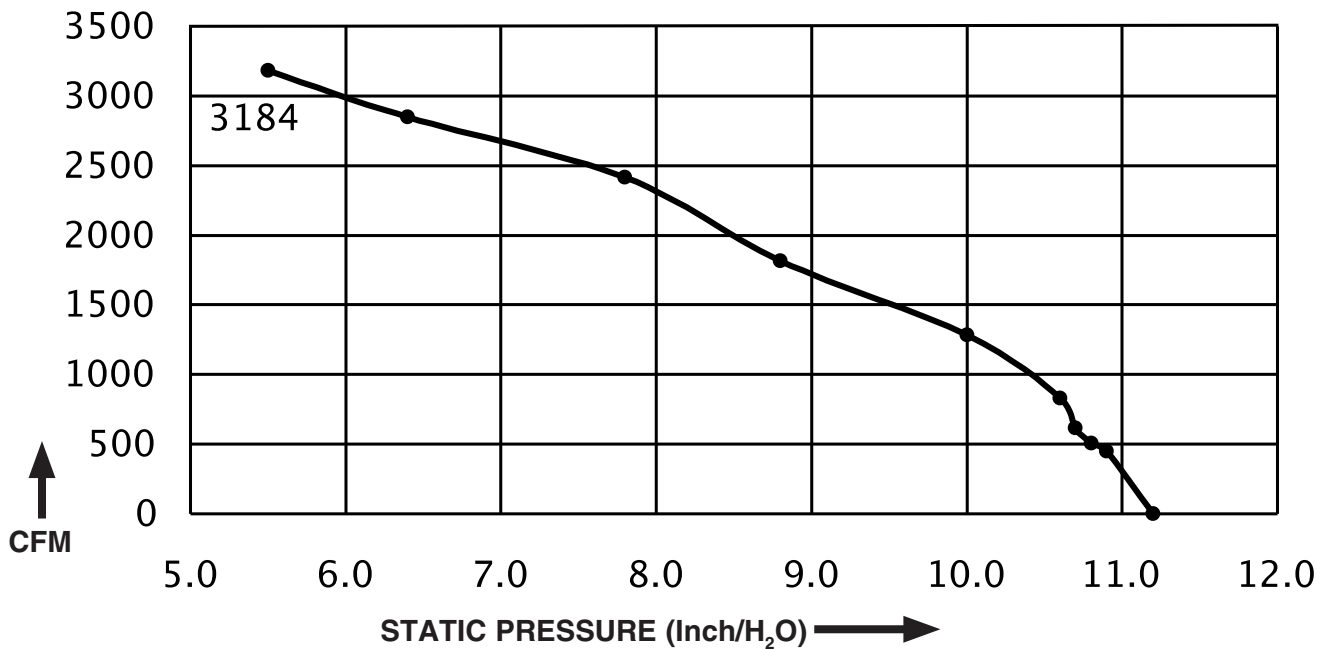


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MODEL G5954 5 HP INDUSTRIAL DUST COLLECTOR

PERFORMANCE CURVE



5 HP GRIZZLY DUST COLLECTOR PERFORMANCE RESULTS						
Max CFM	Max SP	HP	Volts	Amps	Inlet Dia.	Impeller Dia.
3184	11.2	5	220	34	9"	13"

Restrictor Plate (Inches)	ø 9"	ø 8"	ø 7"	ø 6"	ø 5"	ø 4"	ø 3"	ø 2"	ø 1"	ø 0"
Static Pressure (Inch/H ₂ O)	5.5	6.4	7.8	8.8	10.0	10.6	10.7	10.8	10.9	11.2
CFM	3184	2848	2415	1815	1284	827	617	503	450	0

The airflow test probe is located 1.5x duct diameter upstream from the air inlet.
Test pipe length is a minimum of 10x duct diameter.



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 which are 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 THROUGH 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.** Wood dust is a carcinogen and can cause cancer and severe respiratory illnesses.
- 4. ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing damage.
- 5. WEAR PROPER APPAREL. DO NOT** wear loose clothing, gloves, neckties, rings, or jewelry which may get caught 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 CHILD PROOF.** 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 LIT.** Clutter and dark shadows may cause accidents.
13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Undersized cords overheat and lose power. Replace extension cords if they become damaged. DO NOT use extension cords for 220V machinery.
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 and alignment of parts, broken parts, part mounting, loose bolts, and any other conditions that may affect machine operation. Repair or replace damaged parts.
19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. The use of improper accessories may cause 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.** Keep proper footing and balance at all times.
23. **MANY MACHINES WILL EJECT THE WORKPIECE TOWARD THE OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."
24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY.**
25. **BE AWARE THAT CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Make sure you know the hazards associated with the type of dust you will be exposed to and always wear a respirator approved for that type of dust.



WARNING

Additional Safety for Dust Collectors

- 1. MACHINE USE.** Do not use this dust collector to pick up liquids and metal scrap including, but not limited to, nails and filings. Also, do not pick up material which cannot safely pass through the impeller such as solid wood scraps.
- 2. KEEPING FINGERS SAFE.** Do not place your hands or tools near the open inlet during operation for any reason including, but not limited to, unclogging material and testing suction. The impeller could cause serious damage to body parts if touched while spinning.
- 3. SAFE SERVICING.** Disconnect power and allow impeller to come to a complete stop before servicing or working on the dust collector ducting system.
- 4. SUSPENDED DUST PARTICLES AND IGNITION SOURCES.** Do not operate the dust collector in areas where explosion risks would be high if dust were dispersed into the area. Areas of high risk include, but are not limited to, areas near pilot lights and/or open flames.
- 5. AVOIDING FIRES.** Do not allow steel to strike against impeller—this may produce a spark. Sparks can smolder in wood dust for a long time before fire or flame is detected. If metal contacts metal during operation, immediately turn off the dust collector, unplug the power cord from the outlet or flip the disconnect switch and wait for all moving parts to stop. Remove collection bags and empty the dust into an approved air tight metal container in case of spark. Remedy the metal to metal contact problem before resuming operation. Locate the dust collector within view of operation or near a smoke detector, and keep away from combustible materials.
- 6. EMPTYING DUST.** When emptying dust from the collection bags or drum, wear a respirator and safety glasses. Empty dust into an approved container and dispose of properly.
- 7. CLEANING AIR.** Do not confuse this dust collector with an air cleaner. This dust collector is only designed to collect dust from a machine, not clean dust suspended in the air.

WARNING

Like all machines there is danger associated with 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.



SECTION 2: CIRCUIT REQUIREMENTS

220V Single-Phase

! WARNING

Serious personal injury could occur if you connect the machine to the power source before you have completed the set up process. **DO NOT** connect the machine to the power source until instructed to do so.

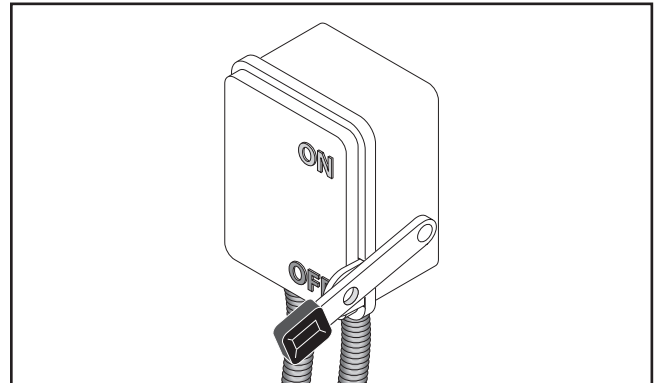


Figure 1. Locking shut-off switch.

Amperage Draw

The Model G5954 motor draws the following amps under maximum load:

Motor Draw at 220V34 Amps

Circuit Requirements

We recommend using a dedicated circuit for this machine. 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.**

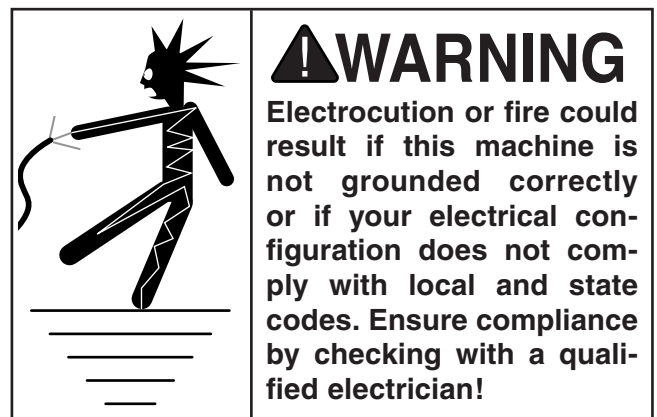
220V Circuit.....50 Amps

Connection Type (Figure 1)

220V Locking Shut-off Switch

Grounding

In the event of an electrical short, grounding reduces the risk of electric shock. The grounding wire in the power cord must be properly connected to the grounding pole in the locking shut-off switch; likewise, the locking shut-off switch must be properly installed and grounded. All electrical connections must be made in accordance with local codes and ordinances.



SECTION 3: SET UP

Inventory

After all the parts have been removed from the two boxes, you should have the following items:

Large Component Inventory (Figure 2) Qty

- A. Casters (shown attached to base plate) 4
- B. Base Plate 1
- C. Motor/Fan Assembly 1
- D. Stand Legs 4
- E. Collector 1

Small Component Inventory (Figure 3) Qty

- F. Gasket 1
- G. 4-in-1 Inlet Adapter and Inlet Caps 1
- H. Upper Bag Support Extenders 2
- I. Lower Support 1
- J. Upper Bag Supports 2
- K. Plastic Elbows 4" 90° 2
- L. Lower Bags 2
- M. Upper Bags 2

Other Components and Hardware Qty

- Flange Bolts $\frac{3}{8}$ -16 x $\frac{1}{2}$ " (A, B, C, D) 32
- Washers $\frac{3}{8}$ " (D, E) 16
- Hex Nuts $\frac{3}{8}$ -16 (C, E, F) 8
- Hex Bolts $\frac{3}{8}$ -16 x $1\frac{1}{4}$ " C, E, F) 8
- Flange Bolts $\frac{5}{16}$ -18 x $\frac{3}{4}$ " (I, J) 6
- Hex Nut $\frac{5}{8}$ -11 (I) 1
- Flange Bolts $\frac{1}{4}$ -20 x $\frac{1}{2}$ " (H, J) 4
- Lower Support Foot Pad $\frac{5}{8}$ -11 1
- Open-End Wrench 10/12mm 1
- Bag Clamps 4

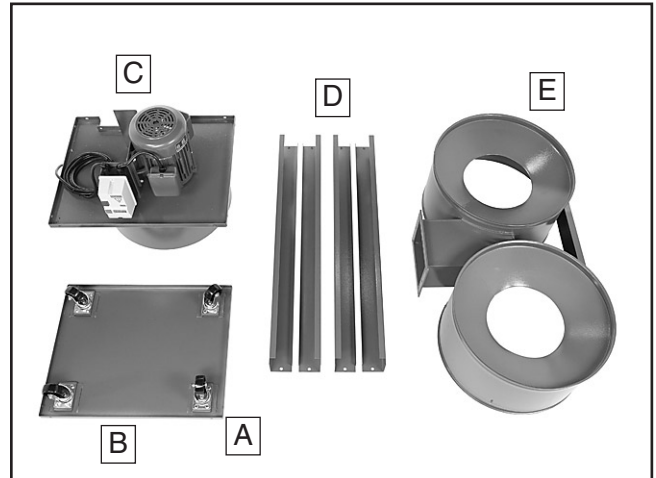


Figure 2. G5954 Large Component Inventory.

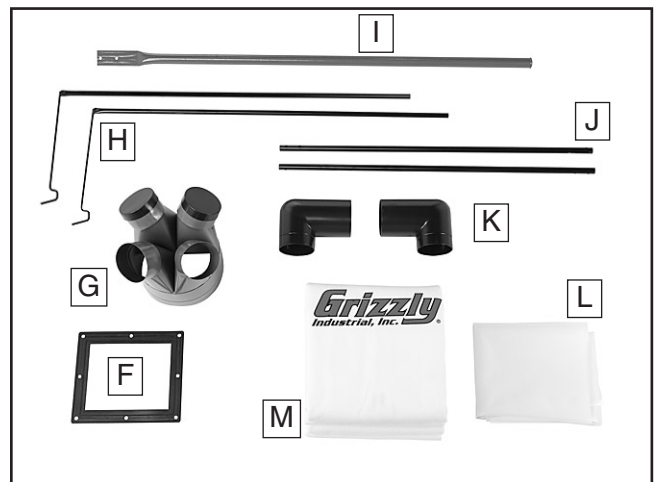


Figure 3. G5954 Small Component Inventory.

In the event that any nonproprietary parts are missing (e.g. a nut or a washer), we would be glad to replace them, or for the sake of expediency, replacements can be obtained at your local hardware store.


NOTICE

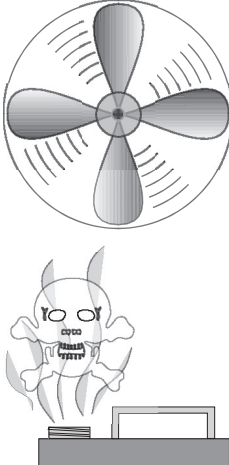
Some hardware/fasteners on the inventory list may arrive pre-installed on the machine. Check these locations before assuming that any items from the inventory list are missing.



Cleaning

When cleaning, avoid chlorine-based solvents, such as acetone or brake parts cleaner, as they may damage painted surfaces should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

	<p>⚠ WARNING Gasoline and petroleum products have low flash points and could cause an explosion or fire if used to clean machinery. DO NOT use gasoline or petroleum products to clean the machinery.</p>
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	<p>⚠ CAUTION Many of the solvents commonly used to clean machinery can be toxic when inhaled or ingested. Lack of ventilation while using these solvents could cause serious personal health risks or fire. Take precautions from this hazard by only using cleaning solvents in a well ventilated area.</p>
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Site Considerations

Working Clearances

Consider existing and anticipated service/maintenance needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 4** for the minimum working clearances.

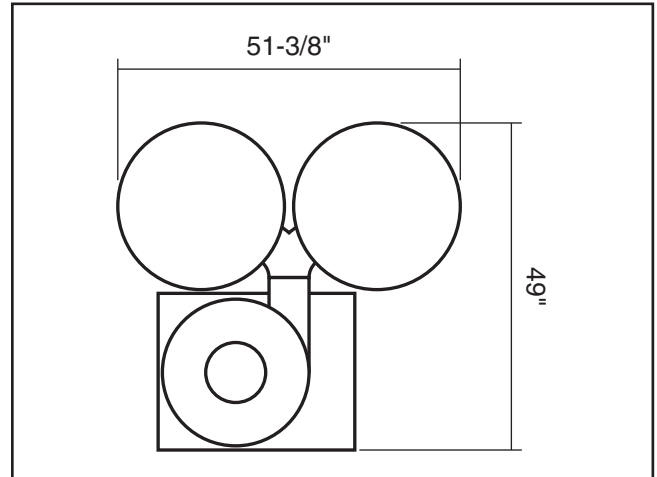


Figure 4. Minimum working clearances.

	<p>⚠ CAUTION Unsupervised children and visitors inside your shop could cause serious personal injury to themselves. Lock all entrances to the shop when you are away and DO NOT allow unsupervised children or visitors in your shop at any time!</p>
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Base and Motor/Fan

Components and Hardware Needed:	Qty
Base	1
Casters	4
Flange Bolts $\frac{5}{16}$ -18 x $\frac{1}{2}$ "	32
Stand Legs	4
Motor/Fan Assembly	1

To assemble the base:

1. Attach each caster to the underside of the base using four $\frac{5}{16}$ -18 x $\frac{1}{2}$ " hex bolts.
2. Attach each leg to the underside of the fan/motor assembly using two $\frac{5}{16}$ -18 x $\frac{1}{2}$ " flange bolts, as shown in **Figure 5**.



Figure 5. Attaching legs to motor/fan assembly.

3. Attach the base to the legs using eight $\frac{5}{16}$ -18 x $\frac{1}{2}$ " flange bolts, as shown in **Figure 6**.

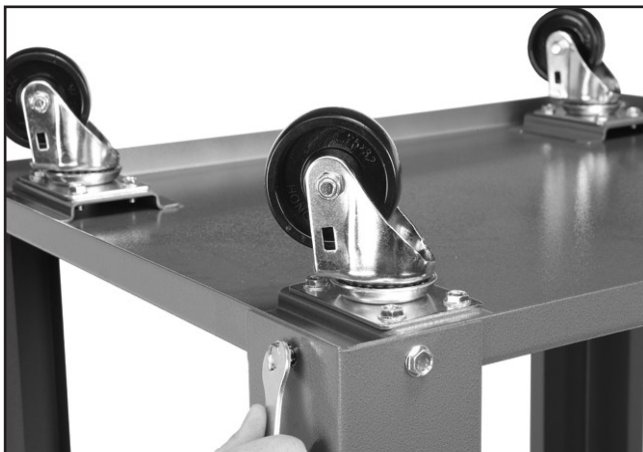


Figure 6. Attaching base to legs.

4. Turn the motor/base assembly right-side up and place carefully onto the floor.

Collector

Components and Hardware Needed:	Qty
Gasket	1
Collector	1
Flange Bolts $\frac{3}{8}$ -16 x $1\frac{1}{4}$ "	8
Hex Nuts $\frac{3}{8}$ -16	8
Flat Washers $\frac{3}{8}$	16
4-in-1 Inlet Adapter	1
Base/Motor/Fan Assembly	1

To attach the collectors to the motor/fan assembly:

1. Fit the gasket onto the outtake of the motor/fan assembly.
2. Mount the collector to the motor/fan assembly using the flange bolts, flat washers and hex nuts, as shown in **Figure 7**.



Figure 7. Mounting collectors to motor/fan assembly.

3. Press-fit the 4-in-1 inlet adapter onto the collector inlet, as shown in **Figure 8**.



Figure 8. Installing 4-in-1 inlet adapter.

Collection Bags

Components and Hardware Needed:	Qty
Upper Bag Supports.....	2
Upper Bag Support Extenders	2
Lower Support.....	1
Lower Support Foot Pad	1
Upper Collection Bags	2
Lower Collection Bags.....	2
Flange Bolts $\frac{5}{16}$ -18 x $\frac{3}{4}$	6
Flange Bolts $\frac{1}{4}$ -20 x $\frac{1}{2}$	4

To set up the collecton bags:

1. Screw the lower support foot pad onto the bottom of the lower support.
2. Attach the lower support to the Collector using two $\frac{5}{16}$ -18 x $\frac{3}{4}$ hex bolts.

3. Attach each upper bag support to an upper bag support extender using the $\frac{1}{4}$ -20 x $\frac{1}{2}$ hex bolts.
4. Attach each upper bag support to the Collector using two $\frac{5}{16}$ -18 x $\frac{3}{4}$ hex bolts.
5. Hang an upper bag from an upper bag support extender.
6. Pull the bottom of the upper bag over the lip of the collector below it, and fasten it in place with a bag clamp, as shown in **Figure 9**.



Figure 9. Fitting bag onto collector.

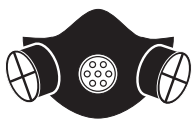
7. Repeat **Steps 4 & 5** for the other upper bag.
8. Fit a lower bag over the bottom lip of the collector, and fasten it in place with a bag clamp.
9. Repeat **Step 6** for the other lower bag.

SECTION 4: OPERATIONS

Operation Safety

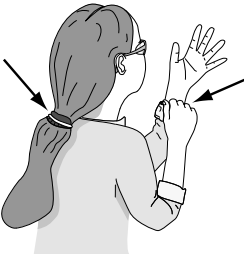
!WARNING

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



!WARNING

Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.



NOTICE

If you ultimately plan to design and build your own dust collection system, WE STRONGLY RECOMMEND that you do as much research as you can. Regardless of the content in this section, Grizzly Industrial will not be held liable for any accidents or workmanship related to the dust collection system you build.

General

The Model G5954 is designed to be a central dust collector system, and is capable of collecting dust from multiple machines running simultaneously. Grizzly offers a complete line of dust collection accessories for setting up a stationary system.

However you choose to build your dust collection system, always make sure there are no open flames or pilot lights in the same room as the dust collector. There is a risk of explosion if dust is dispersed into the air.

Duct Material

You have many choices regarding main line and branch line duct material. For best results, use metal duct for the main line and branch lines, then use a short length of flexible hose to connect each machine to the branch lines.

Metal Duct

Advantages of metal duct is its conductivity and that it does not contribute to static electrical charge build-up. However, static charges are still produced when dust particles strike other dust particles as they move through the duct. Since metal duct is a conductor, it can be grounded quite easily to dissipate any static electrical charges. There are quite a number of options when it comes to metal duct, but metal duct that is specially manufactured for dust collection is the best choice. When selecting your metal duct, choose high quality metal duct with smooth welded internal seams that will minimize airflow resistance. This type of duct usually connects to other ducts or elbows with a simple, self-sealing clamp, is very quick and easy to assemble, and can be dismantled and re-installed with no problems. This is especially important if you ever need to change things around in your shop or add more tools. See **Page 21** for examples.



Avoid inferior metal duct that requires you to cut it to length and snap it together. This type of duct is time consuming to install because it requires you to seal all the seams with silicone and screw the components on the ends with sheet metal screws. Another disadvantage is the rough internal seams and crimped ends that unavoidably increase static pressure.

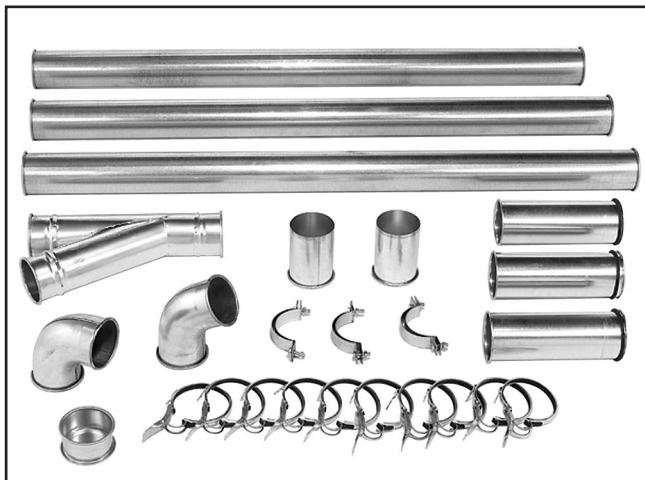


Figure 10. Examples of metal pipe and components.

Plastic Duct

Plastic duct is also a popular material for home shops. One problem with using plastic is that it is less efficient per foot than metal. The popularity of plastic duct is due to the fact that it is an economical and readily available product. It is also simple to assemble and easily sealed against air loss. The primary disadvantage of plastic duct for dust collection is the inherent danger of static electrical build-up, which can lead to fire or explosion if not correctly grounded.



Figure 11. Plastic duct and components.

Flexible Duct

Flexible hose is generally used for short runs, small shops and at rigid duct-to-tool connections. There are many different types of flex hose on the market today. These are manufactured from materials such as polyethylene, PVC, cloth hose dipped in rubber and even metal, including steel and aluminum.

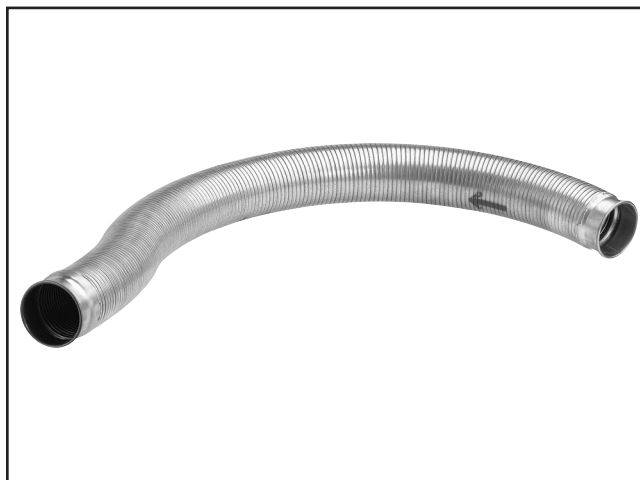


Figure 12. Example of flexible metal duct.

The superior choice here is metal flex hose that is designed to be flexible, yet be as smooth as possible to reduce static pressure loss. There are also many kinds of plastic flexible hose, such as non-perforated drainage type hose and dryer vent hose. Drainage type hose, while being economical, does not quite have the flexibility required for dust collection. The inside of the duct is also deeply corrugated and can increase the static pressure loss by as much as 50% over smooth wall duct. Dryer vent hose, while being completely flexible, is non-resistant to abrasion and has a tendency to collapse in a negative pressure system. We DO NOT recommend using dryer vent hose in your dust collection system.

If using flex-hose, you should choose one of the many types that are designed specifically for the movement of solid particles, i.e. dust, grains and plastics. However, the cost of specifically designed flexible duct can vary greatly. Grizzly offers polyethylene hose, which is well suited for the removal of particulate matter, especially sawdust, since it is durable and completely flexible. Polyethylene is also very economical and available in a wide variety of diameters and lengths for most applications.

System Design

Step 1. Decide Who Will Design

For most small-to-medium sized shops, you can design and build the dust collection system yourself without hiring engineers or consultants. We have included some basic information here to get you started on a simple design.

If you have a large shop or end up designing a complicated system, then we recommend additional research beyond this manual, and that you seek the help of an expert.

Step 2. Sketch Your Shop Layout

When designing a successful dust collection system, planning is the most important step. In this step, you must sketch a basic layout of your shop.

Before you get out your pencil and paper, we recommend you visit our **FREE Workshop Planner** available on our website at www.grizzly.com.

Our *Workshop Planner* will allow you to quickly and easily draw and print a basic shop layout. Don't worry, non-Grizzly brand machines can be substituted with Grizzly machines for layout purposes. After you're finished, make sure to save your layout for later modification.

Your sketch only needs the basic details of the shop layout, similar to **Figure 13**, including all your current/planned machines and your planned placement of the dust collector.

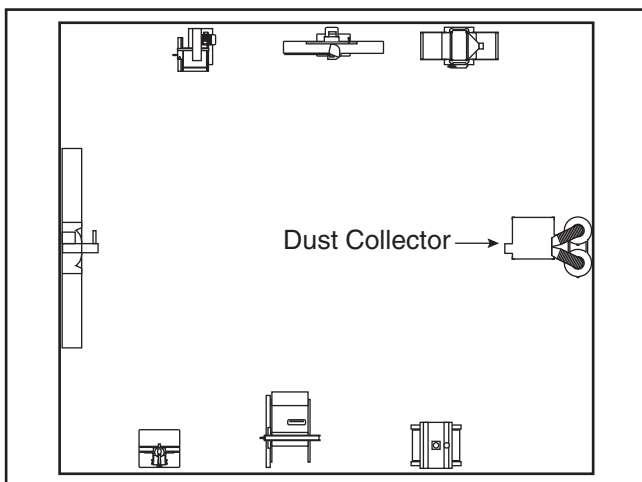


Figure 13. Initial sketch of shop layout.

Step 3. Sketch a Basic Duct Layout

For the next step, sketch how you will connect your machines to the dust collector. Consider these general guidelines for an efficient system:

1. Machines that produce the most sawdust should be placed nearest to the dust collector (i.e. planers and sanders).
2. Ideally, you should design the duct system to have the shortest possible main line and secondary branch ducts. See **Figures 14 & 15** for ideas of good duct layouts vs. bad duct layouts.

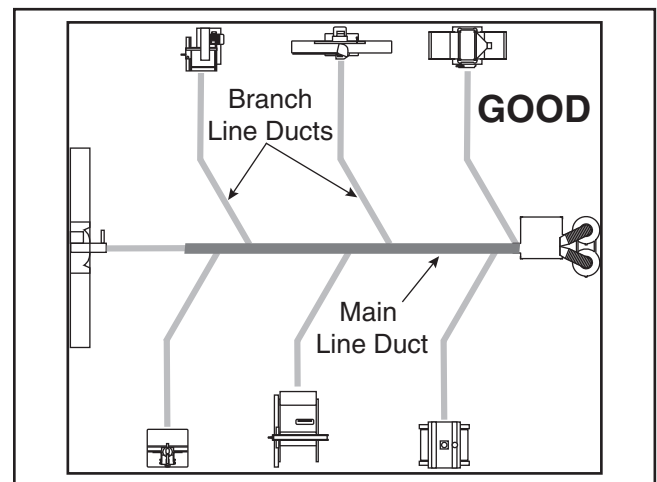


Figure 14. Good duct layout.

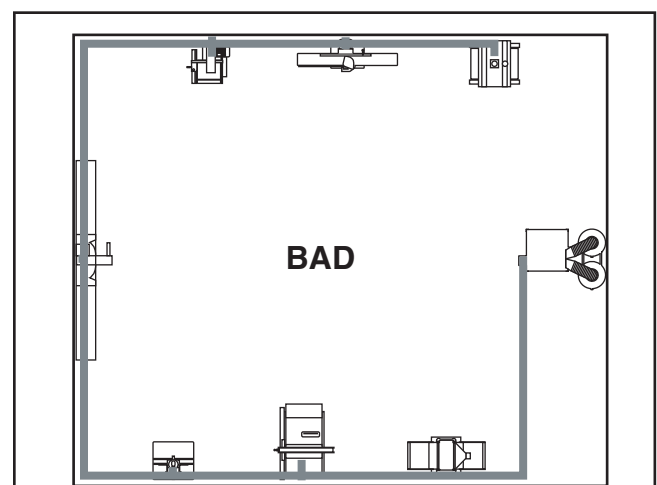


Figure 15. Bad duct layout.

3. Directional changes should be kept to a minimum. The more directional change fittings you use directly increases the overall resistance to airflow.
4. Gradual directional changes are more efficient than sudden directional changes (i.e. use the largest corner radius possible when changing hose or pipe direction).
5. Each individual branch line should have a blast gate immediately after the branch to control suction from one machine to another.
6. The simpler the system, the more efficient and less costly it will be.

Step 4. Determine Required CFM of Each Machine

Since each machine produces a different amount of sawdust, the requirements for the minimum amount of CFM to move that sawdust is unique to the machine (for example, a planer produces more sawdust than a table saw). Knowing this required CFM is important to gauging which size of duct to use.

Figure 16 will give you a close estimation of the airflow your machine requires. Keep in mind that machines that generate the most sawdust should be placed closest to the dust collector. If the machine has multiple dust ports, the total CFM required is the sum of all ports.

Machine Dust Port Size	Approximate Required CFM
2"	98
2.5"	150
3"	220
4"	395
5"	614
6"	884
7"	1203
8"	1570
9"	1990
10"	2456

Figure 16. Approximate required airflow for machines, based on dust port size.

If your machine doesn't have a built in dust port, use Figure 17 to determine which size of dust port to install on your machine.

Machine	Average Dust Port Size
Table Saw	4"
Miter/Radial-Arm Saw	2"
Jointer (6" and smaller)	4"
Jointer (8"-12")	5"
Thickness Planer (13" and smaller)	4"
Thickness Planer (14"-20").....	6"
Shaper	4"
Router (mounted to table)	2"
Bandsaw.....	4"
Lathe.....	4"
Disc Sander (12" and smaller)	2"
Disc Sander (13-18").....	4"
Belt Sander (6" and smaller)	2"
Belt Sander (7"-9")	3"
Edge Sander (6" x 80" and smaller).....	4"
Edge Sander (6" x 80" and larger)	5"
Drum Sander (24" and smaller)	2 x 4"
Drum Sander (24" and larger).....	4 x 4"
Widebelt Sander (18" and smaller)	5"
Widebelt Sander (24"-37" single head) ..	2 x 6"
Widebelt Sander (24"-51" double head) ..	5 x 4"

Figure 17. Dust port size and quantity per average machine.

Write the required CFM for each machine on your sketch, as shown in Figure 18.

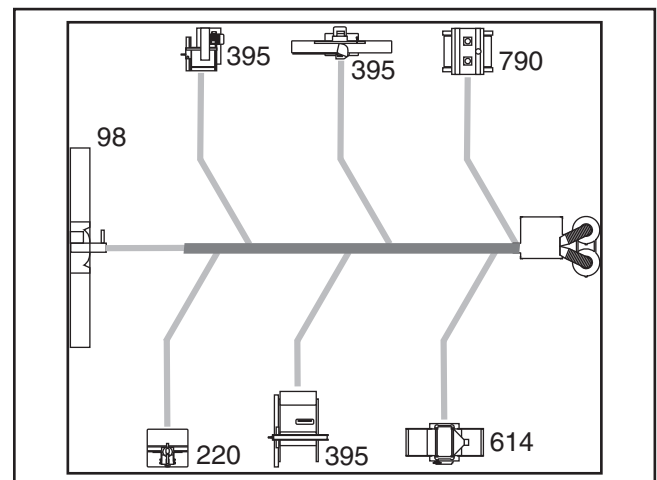


Figure 18. CFM requirements labeled for each machine.

Determining Main Line Duct Size

The general rule of thumb for a main line duct is that the velocity of the airflow must not fall below 3500 FPM.

For small/medium sized shops, using the inlet size of the dust collector as the main line duct size will usually keep the air velocity above 3500 FPM and, depending on your system, will allow you to keep multiple branches open at one time.

Mark your drawing as in **Figure 19**, but using the inlet size for your dust collector as the main line.

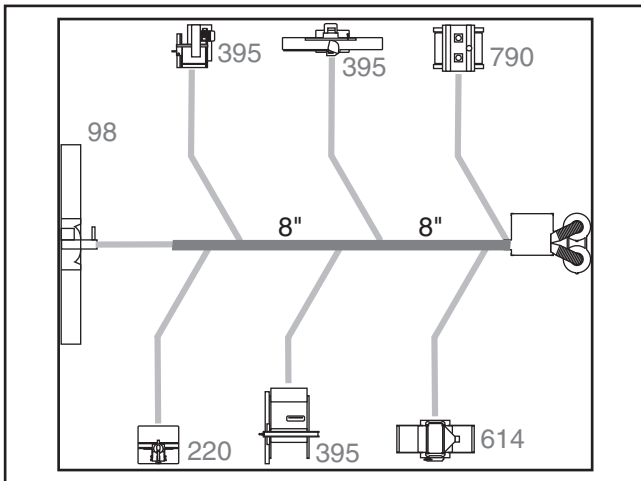


Figure 19. Main line size labeled on sketch.

Determining Branch Line Duct Size

The general rule of thumb for a branch line duct is that the velocity of the airflow must not fall below 4000 FPM.

For small/medium sized shops, using the dust port size from the machine as the branch line duct size will achieve the correct velocity in most applications. However, if the dust port on the machine is smaller than 4", make the branch line 4" and neck the line down right before the dust port.

Note: *Systems with powerful dust collectors work better if multiple blast gates are left open. This also allows you to run two machines at once. Experiment with different combinations of blast gates open/closed to find the best results for your system.*

Write your determined branch line sizes on your drawing, as shown in **Figure 20**.

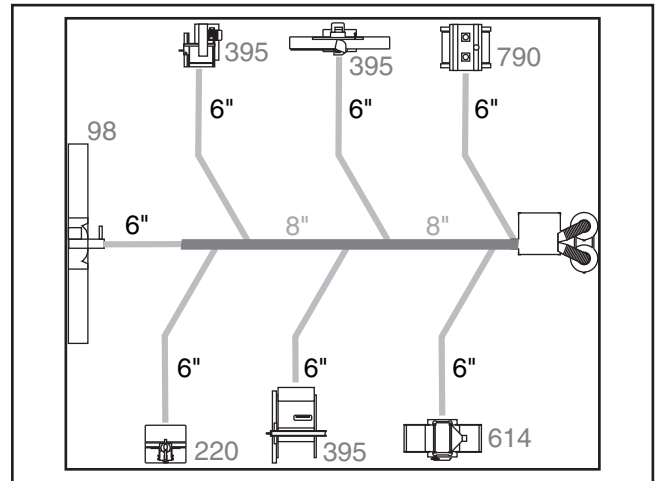


Figure 20. Branch line sizes labeled on sketch.

Here are some frequently asked questions when determining branch line sizes:

How do I figure which size of branch line to use if the machine has two dust ports?

Simply add the total CFM given for each size from **Figure 16** and refer to that CFM number in **Figure 21**. Then, split the branch line just before the dust ports with matching duct sizes.

What about two machines on the same branch line?

You have two options:

1. If both machines will be running at the same time, add the total CFM given for each size from **Figure 16** and match the branch line given in **Figure 21**.
2. If both the machines will never be run at the same time, reference the machine with the biggest dust port to **Figure 21** and add blast gates after the Y-branch to open/close the line to each machine.

Total CFM	Branch Line Size
600	5"
700	5"
800	6"
1000	6"
1200	7"
1400	8"
1600	8"

Figure 21. Branch line sizing chart by total CFM (for use when multiple machines share line).



Calculating Duct Resistance

Adding duct work, elbows, branches and any other components to a duct line increases airflow resistance (static pressure loss). This resistance can be minimized by using rigid (smooth) pipe and gradual curves, as opposed to flexible pipe and 90° elbows.

The purpose of calculating the resistance is to determine if it is low enough from the machine to the dust collector to meet the given CFM requirement for the machine. Use the charts in **Figure 22** to calculate the resistance of duct work.

Duct Dia.	Approximate Static Pressure Loss Per Foot of Rigid Pipe		Approximate Static Pressure Loss Per Foot of Flex Pipe	
	Main Lines at 3500 FPM	Branch Lines at 4000 FPM	Main Lines at 3500 FPM	Branch Lines at 4000 FPM
2"	.091	.122	.35	.453
2.5"	.08	.107	.306	.397
3"	.071	.094	.271	.352
4"	.057	.075	.215	.28
5"	.046	.059	.172	.225
6"	.037	.047	.136	.18
7"	.029	.036	.106	.141
8"	.023	.027	.08	.108
9"	.017	.019	.057	.079

Fitting Dia.	90° Elbow	45° Elbow	45° Wye(Y)	90° Wye(Y)
3"	.47	.235	.282	.188
4"	.45	.225	.375	.225
5"	.531	.266	.354	.236
6"	.564	.282	.329	.235
7"	.468	.234	.324	.216
8"	.405	.203	.297	.189

Figure 22. Static pressure loss charts.

In most small/medium shops it is only necessary to calculate the line with the longest duct length or the most fittings (operating under the assumption that if the line with the highest resistance works, the others will be fine).

To calculate the static pressure of any given line in the system, follow these steps:

1. Make a list of each size duct in the line, including the length, and multiply those numbers by the static pressure value given in **Figure 22**.
2. List each type of elbow or branch and multiply the quantity (if more than one) by the static pressure loss given in **Figure 22**.
3. Add any additional factors from **Figure 23**.

Note: Always account for a seasoned filter, so you don't end up with a system that only works right when the filter is clean.

Additional Factors	Static Pressure
Seasoned (well used) Dust Collection Filter	1"
Entry Loss at Large Machine Hood	2"

Figure 23. Additional static pressure factors.

4. Total your list as shown in **Figure 24** to come up with your overall static pressure loss.

Note: When determining static pressure loss over multiple lines, only count the main line numbers once.

Main Line	
6" Rigid Pipe (.037) at 20'	.740
Branch Line	
4" Rigid Pipe (.075) at 10'	.750
4" Flex Pipe (.28) at 5'	1.400
Elbows/Branches	
6" 45° Y-Branch	.329
4" 45° Elbow	.225
Additional Factors	
Seasoned Filter	1.000
Total Static Pressure	4.444

Figure 24. Totaling static pressure numbers.

5. Compare the total static pressure loss for that line to the closest CFM given in the **Performance Curve** section on the data sheet for your machine (located toward the front of this manual).



- If the CFM for your static pressure loss is above the requirement of the woodworking machine, then the line will most likely be successful.
- If the CFM for your static pressure loss is below the requirement of the machine, then that line will not effectively collect dust. You must modify some of the factors in that line to reduce the static pressure loss. Some of the ways to do this include installing larger duct, reducing amount of flexible duct used, increasing machine dust port size, moving machine closer to dust collector to eliminate duct length, and reducing 90° elbows or replacing them with 45° elbows.

System Grounding

Since plastic hose is abundant, relatively inexpensive, easily assembled and air tight, it is a very popular ducting material. We recommend using flexible hose (flex-hose) to connect the woodworking machine to the dust collector. However, plastic flex-hose and plastic duct can create a static electrical build up, which will build until it discharges to a ground. If a grounding medium is not available to prevent static electrical build up, the electrical charge will arc to the nearest grounded source. This electrical discharge may cause an explosion and fire inside the system.

To protect against static electrical build up inside a non-conducting duct, a bare copper wire should be placed inside the duct along its length and grounded to the dust collector. You must also confirm that the dust collector is continuously grounded through the electrical circuit.

If you connect the dust collector to more than one machine by way of a non-conducting branching duct system and blast gates, the system must still be grounded via copper wiring as above, with the wire attached to each grounded machine and dust collector.

Be sure that you extend the bare copper wire down all branches of the system. Do not forget to connect the wires to each other with wire nuts when two branches meet at a “Y” or “T” connection. If using plastic blast gates to direct air flow, the grounding wire must be jumped (**Figure 25**) around the blast gate without interruption to the grounding system.

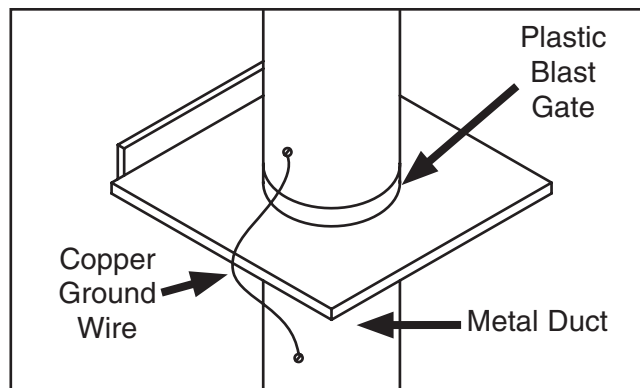


Figure 25. Ground jumper wire when using plastic blast gates and metal duct.

We also recommend wrapping the outside of all plastic ducts with bare copper wire to ground the outside of the system against static electrical build up. Wire connections at Y's and T's should be made with wire nuts.

Attach the bare ground wire to each stationary woodworking machine and attach to the dust collector frame with a ground screw as shown in **Figure 26**. Ensure that each machine is continuously grounded to the grounding terminal in your electric service panel.

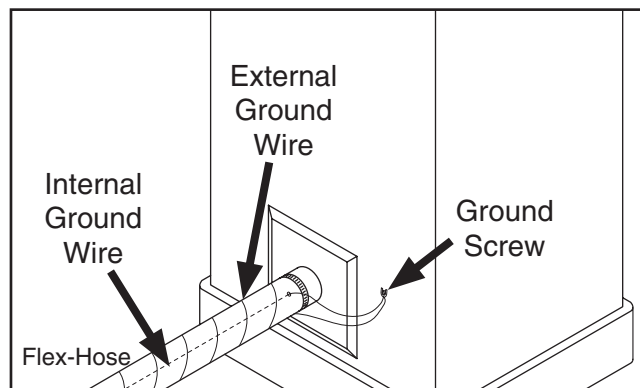


Figure 26. Flex-hose grounded to machine.

SECTION 5: ACCESSORIES

H5293—4" Metal Duct Starter Kit

H5295—5" Metal Duct Starter Kit

H5297—6" Metal Duct Starter Kit

Save over 20% with this great starter kit. Includes: (2) machine adapters, (10) pipe clamps, (3) 5' straight pipes, (1) branch, (3) pipe hangers, (1) end cap, (3) adjustable nipples, (1) 90° elbow, and (1) 60° elbow.

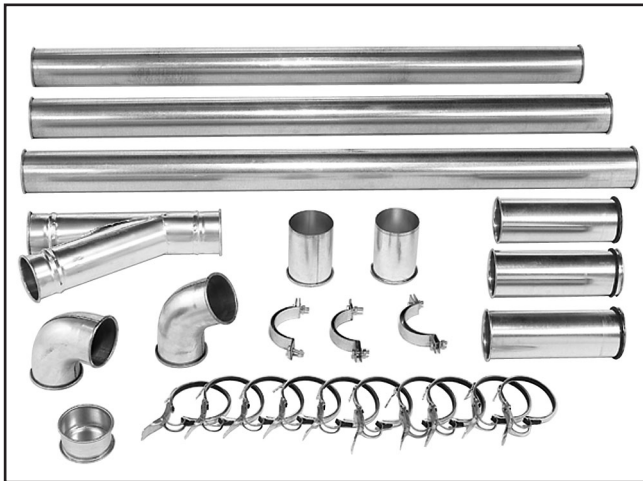


Figure 27. Metal Duct Starter Kit.

G6162—4" x 5' Straight Metal Pipe

G7346—5" x 5' Straight Metal Pipe

G7364—6" x 5' Straight Metal Pipe

H5227—7" x 5' Straight Metal Pipe

H5237—8" x 5' Straight Metal Pipe

These laser welded straight pipes ensure a super smooth internal seam. Ends easily clamp together for a sealed fit without screws or silicone.

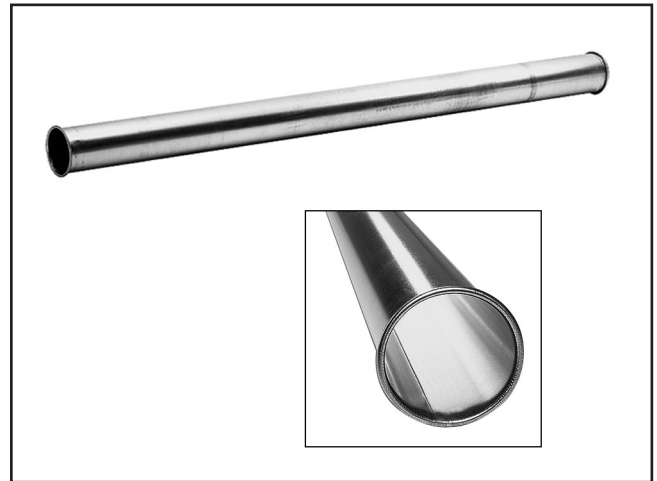


Figure 29. Straight Metal Pipe.

H7215—4" x 5' Rigid Metal Flex Hose

H7216—5" x 5' Rigid Metal Flex Hose

H7217—6" x 5' Rigid Metal Flex Hose

H7218—7" x 5' Rigid Metal Flex Hose

H7219—8" x 5' Rigid Metal Flex Hose

This flex hose with rolled collars provides just enough flexibility to make difficult connections while still keeping the inside wall as smooth as possible to minimize static pressure loss.

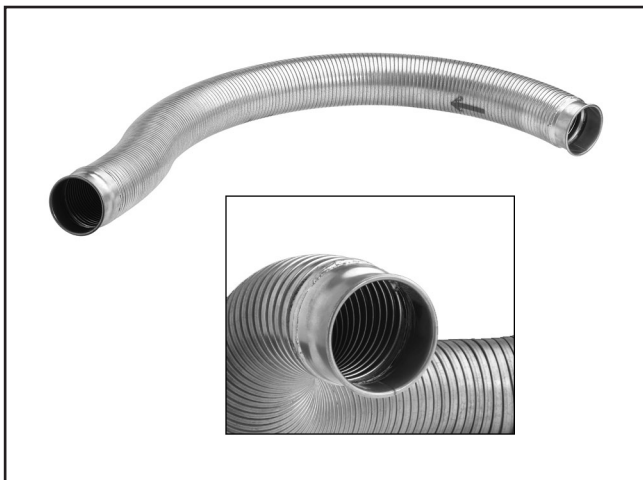


Figure 28. Rigid Metal Flex Hose.

Reducers & Adapters

We carry a multitude of reducers and elbows to cover most applications from 4" through 9".



Figure 30. Metal Reducers & Adapters.

Call 1-800-523-4777 To Order

Electrical Components

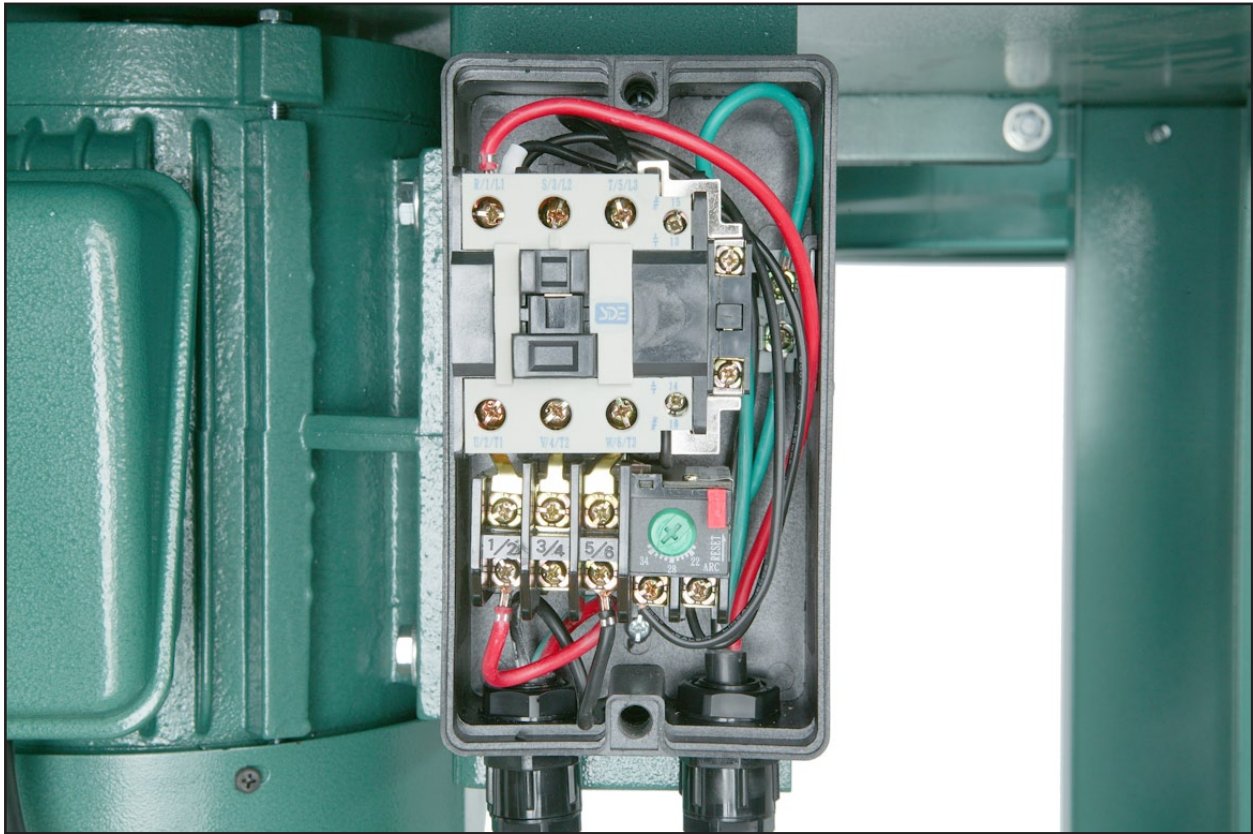


Figure 31. Model G5954 Switch Wiring.



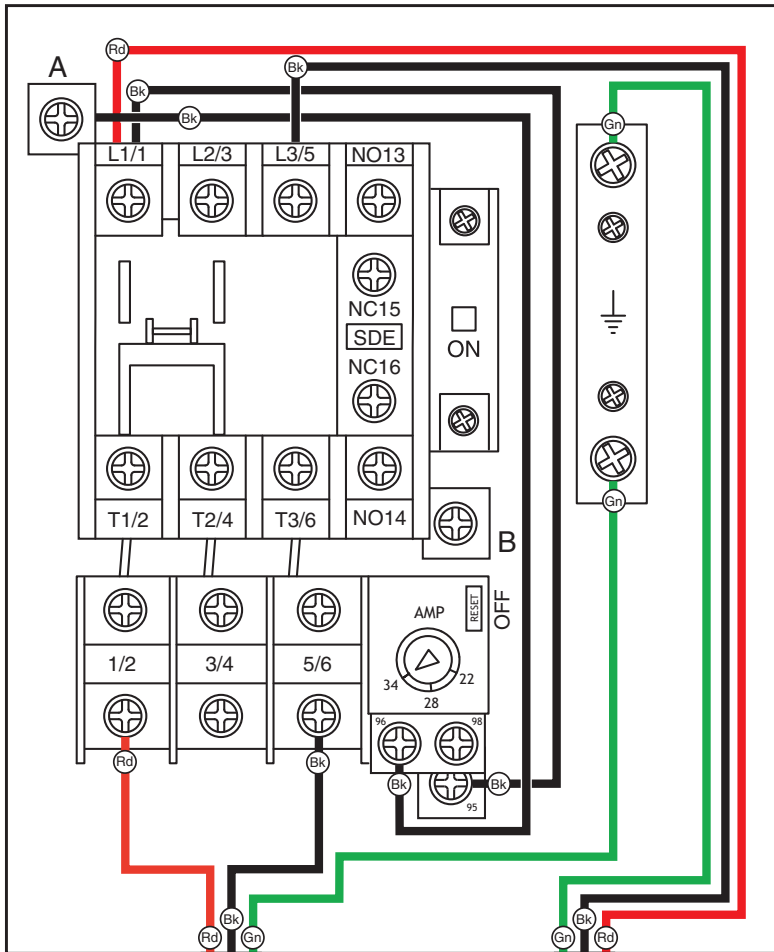
Figure 32. Model G5954 Junction Box Wiring.



Wiring Diagram



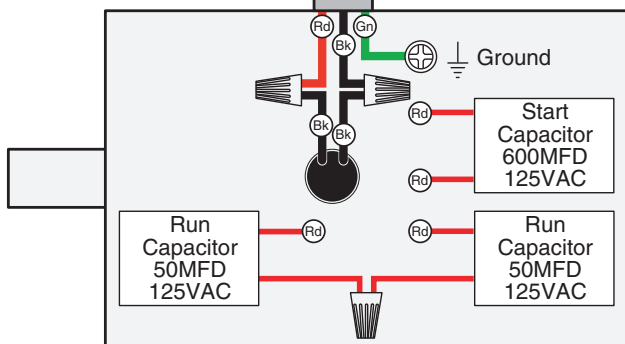
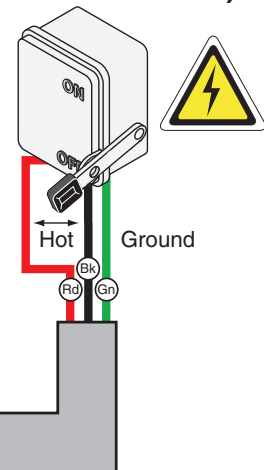
G5954 WIRING DIAGRAM



COLOR KEY	
BLACK	
GREEN	
RED	

⚠ DANGER
 Disconnect power before performing any electrical service. Electricity presents serious shock hazards that will result in severe personal injury and even death!

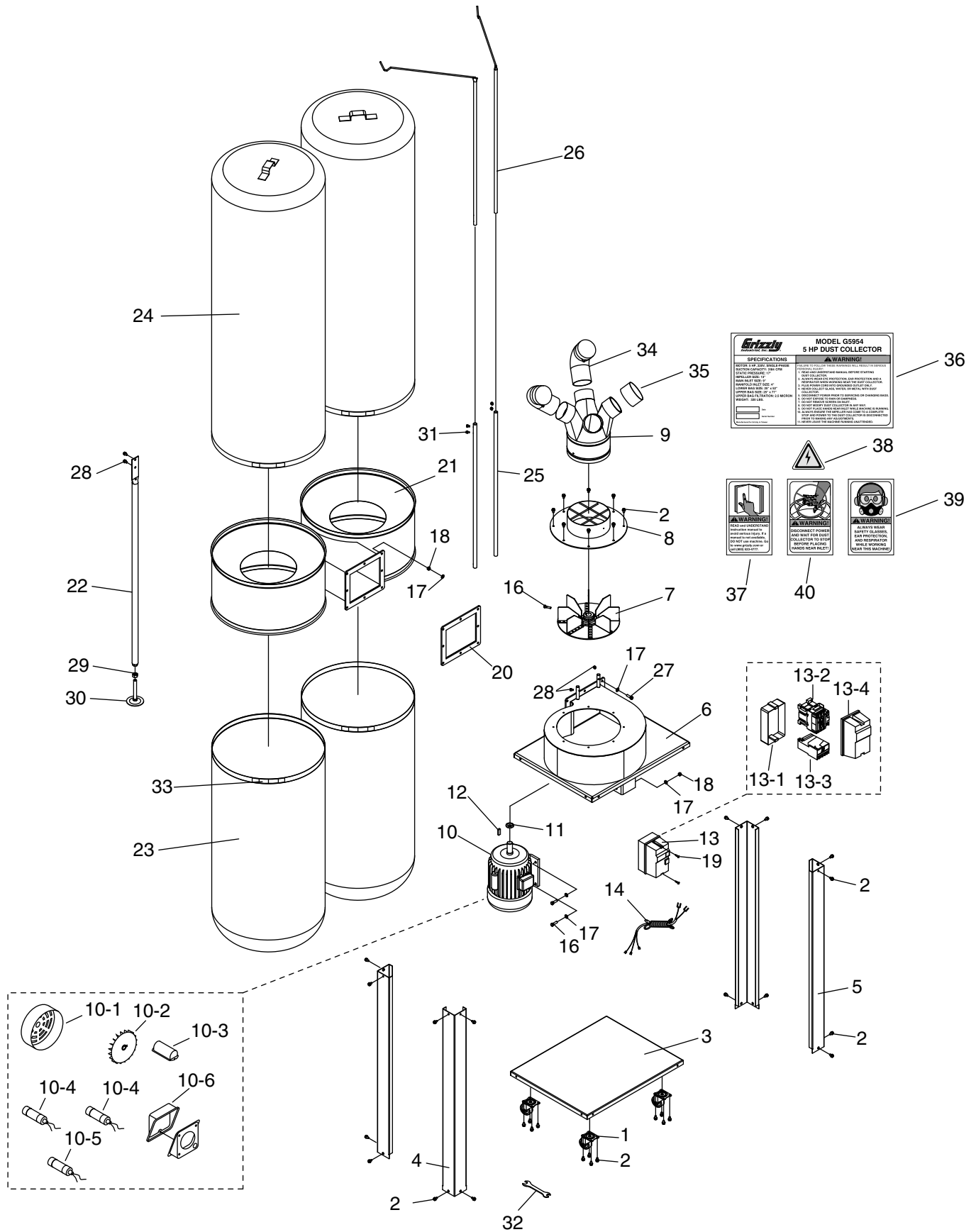
Locking Shut-Off Switch (As Recommended)



5HP, 220V Single Phase Motor



G5954 Parts Breakdown



G5954 Parts List

REF	PART #	DESCRIPTION
1	P5954001	CASTER
2	PFB01	FLANGE BOLT 5/16-18 X 1/2
3	P5954003	BASE PLATE
4	P5954004	STAND LEG
5	P5954005	STAND LEG
6	P5954006	INLET HOUSING
7	P5954007	TURBO FAN
8	P5954008	INLET COVER
9	P5954009	4-IN-1 INLET ADAPTER
10	P5954010	MOTOR 5HP 220VAC
10-1	P5954010-1	MOTOR FAN COVER
10-2	P5954010-2	MOTOR FAN
10-3	P5954010-3	CAPACITOR COVER
10-4	P5954010-4	RUN CAPACITOR 50MFD 125VAC
10-5	P5954010-5	START CAPACITOR 800MFD 250VAC
10-6	P5954010-6	JUNCTION BOX
11	P5954011	SPACER
12	P5954012	KEY 8 X 7 X 55
13	P5954013	5HP MAGNETIC SWITCH ASSEMBLY
13-1	P5954013-1	SWITCH COVER (REAR)
13-2	P5954013-2	CONTACTOR 220V MA-30
13-3	P5954013-3	THERMAL RELAY RA-30 19-35 AMP
13-4	P5954013-4	SWITCH COVER (FRONT)
14	P5954014	POWER CORD (PAIR)
16	PB18	HEX BOLT 3/8-16 X 1

REF	PART #	DESCRIPTION
17	PW02	WASHER 3/8
18	PN08	HEX NUT 3/8-16
19	PS08	PHLP HD SCR #10-24 X 3/4
20	P5954020	GASKET
21	P5954021	COLLECTOR
22	P5954022	LOWER SUPPORT
23	P5954023	LOWER BAG
24	P5954024	UPPER BAG
25	P5954025	UPPER BAG SUPPORT
26	P5954026	UPPER BAG SUPPORT EXTENDER
27	PB24	HEX BOLT 3/8-16 X 1-1/4
28	PFB02	FLANGE BOLT 5/16-18 X 3/4
29	PN04	HEX NUT 5/8-11
30	P5954030	FOOT PAD 5/8
31	PFB03	FLANGE BOLT 1/4-20 X 1/2
32	PWR1012	WRENCH 10/12MM
33	P5954033	BAG CLAMP
34	P5954034	PLASTIC ELBOW 4" 90°
35	P1029029A	INLET CAP
36	P5954036	MACHINE ID LABEL
37	PLABEL-12	READ MANUAL 2" X 3-5/16"
38	PLABEL-14	ELECTRICITY LABEL
39	P5954039	GLASSES EARMUFFS MASK LABEL
40	P5954040	NO HAND INLET LABEL

WARNING

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



WARRANTY 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.

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

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





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<input type="checkbox"/> Modeltec	<input type="checkbox"/> Shop Notes	<input type="checkbox"/> Other:
<input type="checkbox"/> Old House Journal	<input type="checkbox"/> Shotgun News	

3. What is your annual household income?

\$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

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