

# The Black Hole

## Instruction Manual 950cfm

### Unpacking and Damages

Note any external evidence of damage on the freight bill, and have it signed by the carrier's agent. Should damage occur, make a written request for inspection by the carrier's agent within 15 days of the delivery; then file a claim with the carrier since the damage is the carrier's responsibility. **DO NOT RETURN THIS UNIT WITHOUT FIRST OBTAINING AUTHORIZATION.**

### Installation

Remove The Black Hole from the carton and inspect for damages. There is no assembly required.

### **Two people are required to move the Back Hole**

The workstation weighs about 205 lbs, and rolls on two 4" casters. The width is about 31.5 inches. This is as large of a hood that can pass through a standard 36" doorway. Check your doorways before moving to a new location. If you need an inch or so to get through a doorway, try removing the hardware on the door, or take it off the hinges. A handy person can take a door apart and put it back together in 10 or 15 minutes.

Choose a location within 10 feet of a 120 volt grounded outlet. The motor draws 9amps maximum. Exhaust air blows out the bottom of the unit between the wheels.

**Make sure nothing obstructs the exhaust, or the hood performance will drop. Do not for any reason put your fingers, or any object in the exhaust port.**

There is no ductwork so the unit can be installed wherever it is needed in your production process.

### Principals of Operation

- 1. Maximizing Containment**
- 2. Economical Filtration**
- 3. Ergonomic Design**

**Maximizing Containment** is accomplished by enclosing the work area with a hood, and an airflow pattern, that prevents air currents from escaping. The volume of the hood is large, which allows plenty of room for compressed air blasts, and plenty of working space too. The opening size is roughly two square feet to maintain a minimum face velocity of 350 feet per minute (fpm). Four airfoils around the opening direct the airflow in a smooth laminar flow towards the filter.

This smooth laminar flow increases the effectiveness of the hood. These same airfoils act as baffles on any air currents trying to escape the hood. The baffles redirect the blasts of compressed air, and eddy currents back into the laminar flow of the hood. So long as your air blasts are within the hood, they should stay within the hood. The door can be lifted for operations that require a larger opening or are only slightly dusty.

Unfortunately, the operator's hands will still be covered in toner. Since there is a two square foot opening in the hood, you may occasionally blow toner out of it. Keep the part to be cleaned well within the hood to prevent toner clouds from escaping into the room.

### Economical Filtration

The filtration system has been very carefully designed and engineered. The purpose is to achieve as close to 100% toner capture as possible, with the lowest possible filter expense, and high airflow.

The third filter is in the back of the hood above the blower. The purpose of the third filter is to make sure that no toner gets to the motor and blows out into the atmosphere. Only small amounts of toner should ever reach this filter.

The second filter serves the same purpose, but more toner will be intercepted. For this reason we include four secondary filters. This supply should last a long time, so you want be calling us for filters for a while.

**Make sure that the second filter is installed with the bags in the vertical position. Maximum airflow will be when the bags are in the vertical position.**

**To obtain the maximum life of the second and third filters: Avoid blowing compressed air around the edges of the filters when cleaning the hood. Use a vacuum, with a dusting brush attachment, to clean the hood and around the edges of the filters.**

The first filter is designed to stop the toner, and to be reused over and over again. Almost all the airborne toner will be stopped on the surface of this filter, so it can be vacuumed within the hood. A Sears type shopvac with a 2.5 inch hose will work the fastest, and deep clean the foam better than a service vacuum.

**A more thorough cleaning can be obtained by removing the steel frame with the filter in it. Remove the filter from the frame. Thoroughly vacuum both sides of the filter moving across in rows like mowing a lawn. Vacuum the edges of the filter and the frame.**

The three filters, and their toner loading, create a static pressure loss on the airflow system. There is no ductwork in this workstation; all the losses are caused by the three filters and the toner build up. Dust accumulation in the filters reduces airflow.

Performance of the hood can be monitored using the Minihelic gauge. The gauge is very sensitive and is calibrated in the .1"wg (inches of water gauge) divisions. The entire range of the gauge is only 2"wg.

**Make sure the blower is set on high speed before checking gauge for static pressure loss.**

**With three clean filters the gauge will read about 1.2" When the gauge reaches 1.75", the flow will be reduced to about 750 cubic feet per minute. Restore the full flow of the unit by cleaning the first filter.**

**Do not exceed 2.00"wg or damage to the gauge or blower may result.**

If cleaning the foam filter does not restore the pressure gauge to about 1.2"wg, make sure that the bag filters are fully deployed. Check each side of each pocket of the bag filters. It's easier to install them with the blower on. If this does not restore the gauge to about 1.2"wg, you may have to replace the second or final filters.

**Do not clean the bag filters with compressed air. You can shake some of the toner from the filters, or try vacuuming them from the backside. For maximum filter life, avoid using compressed air to clean the hood, or filters, use a vacuum instead.**

### **Ergonomic Design**

The Black Hole has been ergonomically designed to provide maximum comfort, visibility and safety. The face of the hood is angled back to provide a clear view of the work area. The door and top are made of glass coated, unbreakable polycarbonate. The glass coating makes it easy to clean and scratch resistant.

**Clean the door and top with a dust brush vacuum attachment. You may also clean the hood with a soft cloth using a mild cleaner. Avoid abrasive cleaning.**

An enclosed machine light is provided to make viewing of the work area much easier. The fixture creates 2000 lumens, which is equivalent to three 60-watt bulbs. The light may be switched on or off any time the workstation is plugged in. If you need to change the bulbs, do so by removing the screws from the top of the light fixture. Two cool white 20-watt bulbs are required.

**A vari-speed blower switch is provided. Use the high speed for compressed air cleaning of cartridges.**

At low speed the airflow will be about 30% less. However there will be less wear, less energy consumed, and less noise. On high speed the noise level is only about 62 decibels.

The plastic trashcan allows the operator to quickly knock more toner directly into the trash bag. It is a "Rubbermaid Slim Jim" that takes a 33-gallon bag. A locking ring is provided to hold the trash bag.

The basket is provided to fit inside of the trash can. The purpose of the basket is to eliminate the possibility of losing small parts while dumping, and to prevent knocking holes in the bag.

A perforated trash can cover is provided for operations that don't require dumping. Examples would be tearing down cartridges or pouring toner

### **Choosing an Air Compressor**

Any size air compressor will work with the Black Hole. However we recommend one in the 2 to 4 horsepower range, and it should be oil free. Smaller compressors will have to run more, which causes more water to condense in the mainline. Large compressors are louder and may require their own electrical circuits. We recommend at least two filters in the airline to avoid contaminating cartridge parts.

**WARNING: Use a maximum of 30psi for cleaning cartridges. Higher pressures just increase the probability of dust clouds escaping your hoods.**

## **Replacement Filters**

**Foam Filter: Reticulated foam, 80 pores per inch, 23.5" x 23.5" x 1.5" thick \$25.**

**Secondary Filter: Defiant high efficiency bag filter. Nominal size 24 x 24 x 12 long, 71% efficient on .5 micron particles. \$30.  
Carton of 8 Secondary Filter price each \$28**

**Final Filter: Defiant high efficiency bag filter. Nominal size 12 x 24 x 18 long, 95% efficient on .5 micron particles. \$35.  
Carton of 8 Final Filter price each \$33**

**[www.plastictoolingcorp.com](http://www.plastictoolingcorp.com)**

**Plastic Tooling Corp 800-595-8334**