



IWG News

The Newsletter of the Island Woodturners Guild

September 2023



About the IWG:

The [Island Woodturners Guild](#) meets from 1:00 - 4:00 PM on the 4th Saturday of each month (except for July/Aug) at the Central Saanich Senior Citizens' Centre, [1229 Clarke Road](#), Brentwood Bay, BC.

Visitors are welcome.

Executive Committee

President:
Don Costello

Vice President:
Don Robinson

Treasurer:
Bonnie Hallas

Secretary:
Michael McEwan

Members at Large:
Hovan Baghdassarian
John Kilcoyne
Virginia Lee

Past President:
Tim Karpik

Newsletter Editor:
John Kilcoyne

The IWG gratefully acknowledges the support of the following companies:

[Artisan Wood to Works](#)
[Chipping Away](#)
[Industrial Plastics & Paints](#)
[Island Blue Print](#)
[KMS Tools](#)
[PJ White Hardwoods](#)
[Richelieu Hardware](#)
[William Wood-Write](#)

THE PRESIDENT'S TURN

Hi all:

I hope that everyone is looking forward to getting back into the swing of things after the summer break.

At the outset, I know I speak for everyone when I express my sincere thanks to Tim Soutar for his demonstration in June. Our scheduled demonstrator bailed 5 days before the June meeting and despite the incredibly short notice, Tim stepped up to deliver a great demonstration. As his two-part bowl forms the basis of the September Challenge, I am looking forward to seeing the results.

Planning for this year's demonstrations is going well and begins with a demonstration on Hollowing Tools and Techniques at the September meeting. Subsequent meetings will include demonstrations on Texturing and Spiralling, Inside-Out Turning, Multi-Axis Turning, Pen Turning and hopefully Segmenting. There are still some vacancies so if you are willing to do a demonstration, please contact a member of the Executive. Your participation is essential to the operation of the Guild.

In the June edition of the newsletter, John K. offered some information and advice on the dangers of dust inhalation. He follows that up in this edition with information and advice regarding dust collection systems. As one who is the midst of setting up my own system, I look forward to learning more about the possibilities and urge everyone to take appropriate precautions.

Finally, we have number of new members and urge everyone to welcome them to our community.

Hope to see you on Saturday.

Don Costello

NEXT MEETING: SATURDAY SEPTEMBER 23: 1:00 p.m.



This meeting will feature a discussion and demonstration of various hollowing tools which can range from dental tools and modified hex wrenches for very small forms to camera-assisted captive rigs for larger turnings.

Demonstrators will include Tim Soutar, John Gayfer, and John Kilcoyne.



This will be followed by a presentation of the September challenge turnings and *Show and Tell*.

REMINDER: MEMBERSHIP RENEWAL

The deadline for renewal is September 30th.

Please note that there are **two** steps to do so.



First, you must complete online the application form which can be found here:

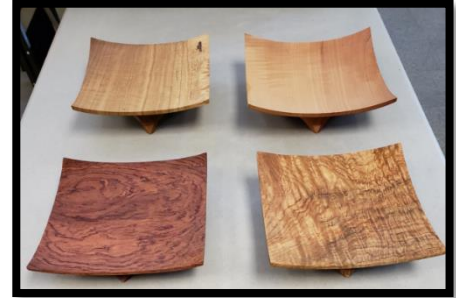
<https://www.islandwoodturners.ca/membership-application/>.

Secondly, annual dues of \$50 must be paid either by e-transfer or cheque/cash. If you plan on paying your dues at the September meeting, cheques should be payable to "IWG" and if by cash, exact amount would be appreciated.

NOTE: If the membership application and dues have not been received by October 31, 2023, you will be removed from the Membership List and will no longer receive notice of meetings or the Newsletter and will no longer be eligible to attend meetings.

JUNE RECAP

(Six days before our June meeting, our remote demonstrator informed us that he would not be delivering his promised demo. Tim Soutar who over the years has become our go-to emergency demonstrator, once again, agreed to fill in by demonstrating turning a low square-edge bowl and base.)



As a video of Tim's demo is available to members online (<https://youtu.be/3RguVXkS5IU>), the following are selected highlights.

Blanks

The project requires two equal-sized blanks with a thickness between 1" to approximately 1.75". (Tim finds 2" a bit thick). They must be cut as square as possible.



If you align the grain on both components, it will not only look better but will reinforce the illusion that it was turned from a single piece of wood. After cutting the first blank, make a 45-degree cut on the second blank and then using this as a reference point, cut the second square blank.

SAFETY: In turning any square blank, you must be constantly aware of the location of the outside corners if you value your fingers or hands. Accordingly, Tim always stops the lathe before adjusting the tool rest and always rotates the blank by hand, before turning it on.

Turning the Bowl (Top)

After truing up the blank, Tim turns a tenon on what will become the inside of the bowl. He uses a spindle gouge to turn tenons as it is easier to access the "corner" and provides a cleaner surface.



He then mounts the blank in a chuck and then turns a second tenon on what will be the underside of the bowl. This second tenon will secure the bowl to the base and should be sized for a socket on the base.

Note: The socket will be used to hold the base in expansion mode so it must be large enough to fit your chuck jaws. (In Tim's case, this means a minimum 2" diameter x 1/4" deep).

He then shapes the outside of the bowl. While normally, one would move from the centre to the outside, Tim found that it depends upon the grain orientation. In previous efforts, he found it easier to cut in the opposite direction. However, during for the demonstration, he found that he was getting some tear out at the corners and so opted for the conventional approach (right).



Needless to say, as you approach the corners, you are turning more and more air which raises the possibility of tear out. Tim emphasized that you must not push the tool into the wood – let the tool do the work.

Once he has a fair curve, he power-sands the piece with the lathe off. He takes special care to avoid rounding over the corners.

He then reverse-mounts the blank to hollow the inside of the bowl. If the blank does not run true, you may be able to correct this by rotating the blank in the chuck.

Note: To assist in the entry cut and for safety, Tim uses an auxiliary light to illuminate the corners of the blank.

He uses calipers to check that the edge has a consistent thickness. Once completed he sands the inside with the lathe off.

Turning the Base

The same set up is followed with the base with the top facing the headstock and the bottom at the tailstock.

A tenon is turned and the blank is then reverse mounted in a chuck. After truing up the base, he turns the socket using a parting tool and an angled scraper. He opts for a depth approximately 1/2 that of the tenon to allow a slight reveal of the tenon to show.



Once the outside of the base is turned and sanded, he reverse-mounts this in a chuck in expansion mode and hollows the base once again looking for a consistent thickness at the edges.

After sanding this piece, the bowl and base are glued together, and a final finish is applied.

MINI 101: INTRODUCTION TO WOODTURNING?

If there is sufficient interest (**a minimum of 6 members**), we are willing to, once again, offer an introductory course for novice members – **those who have little or no turning experience**.

The 4-hour session, which would take place in the new year, would cover safety issues, sharpening techniques, demonstrations by senior turners and an opportunity for new members to practice various cutting techniques under the guidance of senior members of the Guild. The latter would focus on turning techniques and would not involve turning a finished product. It would take place on a Saturday (12 p.m. – 4 p.m.) at our regular meeting place. There would be charge of \$25 to cover the cost of hall rental and wood.



Before proceeding, we need to have a rough idea of whether there is sufficient interest. **If you are interested in attending such a session, please let John Kilcoyne know (jrk@uvic.ca)**

DUST PROTECTION: PART TWO

This is the second part of a two-part note on Dust Protection. The first part in the June newsletter considered how you can protect yourself from airborne particles. As was obvious from that discussion the best course is to prevent wood dust particles getting into the air by capturing them at the source with a dust collector. That is the focus of this Part.



INTRODUCTION

There is a vast amount of information on types of dust collectors (DC), filters, separators, dust hoods, ducting and venting. The following are some of the key issues to keep in mind.

1. **Velocity** refers to the **speed** of air moved as measured in feet per minute (FPM) while **capacity** refers to the **volume** of air that is moved as measured in cubic feet per minute (CFM).

These two factors are inversely related. While you can easily increase velocity by reducing the size of ducting (think of your shop vac), this will also reduce the volume of air collected. In short, you will move the air faster but proportionately less of it which means reduced dust collection.

Conversely, if you increase the size of the ducting, you will move more air but at a much lower velocity which will also adversely affect the capture of dust. Hence, the task is to find the right balance between air speed (FPM) and capacity (CFM).

While this will vary depending upon a number of factors, if your DC will only be connected to a single tool, most sources suggest a minimum of **3500 FPM and 400/500 CFM**.

However, the mere fact that a DC unit has a greater CFM rating does not mean that it will have this capacity **at the point of dust collection**. You must factor in the impact of resistance.

2. **Resistance** or loss of static pressure in dust collection arises from two main sources: the filter and ducting. Obviously, as resistance increases, velocity and capacity decreases.

a. Filter

While the density and composition (media) of a filter are important sources of friction, one of the most important factors is the overall surface area of a filter. Generally speaking, the larger the surface area, the lower the drop in velocity and capacity. This can be quite dramatic. For example, a filter with a 200 sq. ft. of surface area has only 25% the resistance of a 100 sq. ft. filter.

b. Friction

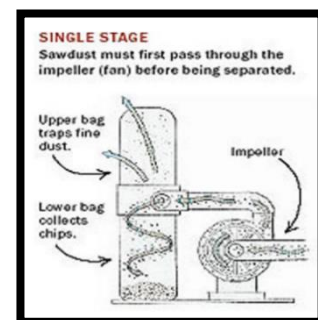
This term refers to the resistance which occurs as air and chips/dust move through a duct. This involves a consideration of the length of ducting, the number of wyes or elbows, dust hoods and most importantly, the diameter of the duct. If you reduce the size of ducting to double the velocity of air, you quadruple the friction resistance which means an even greater drop in the volume of air moved.

Accordingly, to obtain the desired velocity and capacity to capture the finest dust particles, you must consider the rating of the DC, the nature and size of the filter and the diameter, length, and composition of duct work.

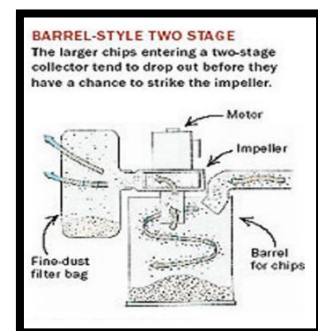
TYPES OF DUST COLLECTORS

There are essentially two types of DC for a hobby workshop: single-stage and two-stage.

In a **single-stage unit**, chips and dust pass through the impeller with separation taking place afterwards. Chips and some heavy particles fall into the sealed lower bag while lighter dust is trapped by the upper filter as the air is exhausted.



In a **two-stage DC**, the chips and dust first pass through a “separator” which is located before the impeller and allows much of the chips and dust to drop into a storage container. Any remaining dust is then captured by the filter bag. While there are a number of different types of separators, the most efficient are cyclone units.



It is hardly surprising that two-stage DCs are much more efficient. While discussed in more detail below, in single-stage DCs, most of the fine dust reaches the filter which means they will quickly become packed with dust which will reduce suction. A separator will prevent the vast majority of dust from ever reaching the filter which means better suction and longer filter life.

On the other hand, single-stage DCs are much cheaper and anecdotally, it appears that this is the type of DC owned by most Guild members. Accordingly, the following note begins by discussing single-stage units and then adds some tips on how to improve the performance of these units. This is followed by a consideration of two-stage units.

SINGLE-STAGE UNITS (SS-DC)

If you own or are thinking of purchasing a SS-DC, the following are some of the issues to consider.



1. CFM CAPACITY

What capacity you require will hinge on many factors including size of turnings, lathe speed, size, length and type of ducting, and number of hookups. Having said that, as a general rule if your DC is moved from machine to machine with a short hose, you can likely get by with a DC with a CPM of 500. However, as noted above, if you run multiple lines to various tools, you will require a machine with a much higher rating to overcome the associated resistance. As a general rule, the larger the impeller, the better the draw.

2. FILTER EFFICIENCY

The first and most obvious point is how much of the finest and most dangerous dust particles (0.1 – 10 microns) a filter will collect. Some manufacturers will provide only a general rating such as “1 micron filter”. You should be aware that this refers to the media used in the filter - of which there are many different types - not what percentage of these the filter will actually capture.

Others, using independent testing protocols, do provide this information. For example, while the *Laguna* 1 hp unit uses a “1 micron bag filter”, its independently tested “capture performance” is “99% of 5-micron particles, 90% of 1-micron particles”.

Some manufacturers will include an ASHRAE 52.2, EN (European Standard), or MERV rating for their filters. For example, a MERV rating will range from 1 – 16 which reflects increasing efficiency. A filter with a MERV12 rating means that it will capture an impressive 99.97% of particles between 0.2 – 2 microns.

3. FILTER TYPE: BAG VS CANNISTER

There are two types of DC filters: “cloth” bag and pleated cannister.

a. BAG FILTERS

PLEASE NOTE

Early SS-DCs were sold with “fabric” bag filters many of which would not capture particles smaller than 30 - 35 microns. And that is still the case today with bag filters on many machines. If you have one of these filters, it means that your DC is blowing the most dangerous particles (0 – 10 microns) through the filter – typically at head height!

One response is to locate your DC in a shop “closet” or outside your shop. The latter will of course depend upon a number of factors including the length of ducting and CFM capacity. Either option has the additional advantage reducing the high decibel ratings of many SS-DCs.

Otherwise, you could purchase an aftermarket bag filter with a much higher rating. *Lee Valley* sells 3 different sizes of bags (\$75-\$90) which it claims can trap particles from 3 – 5 microns when clean and as fine as 1 micron when seasoned after use. (However, there is no indication of filter efficiency i.e. what percentage of these particles will be captured.)

In any event a bag filter needs to be cleaned regularly. With a surface area of only 18 - 22 sq. ft., the filter will eventually clog leading to reduced suction. Of greater concern, is the likelihood that the increased pressure caused by a clogged bag will simply blow the finest particles through the bag and into your shop air. The first 30 seconds of the following video illustrates the potential result.

<https://www.google.com/search?client=firefox-b-d&tbm=vid&q=how+to+increase+suction+on+a+dust+collector&sa=X&ved=2ahUKEwjlvde6ysmAAXVJHjQIHezYAdIQ8ccDegQIERAH&biw=1268&bih=539&dpr=1.5#fpstate=ive&vld=cid:e806d6d8,vid:FjMikFJq66o>

If you are interested in purchasing a SS-DC with a bag filter, the following are a few units you may want to consider.

MAGNUM

KMS offers 3 SS-DC models with a bag filter:

1.0 hp	750 CFM	\$380
1.5 hp	1280 CFM	\$530
2.0 hp	1600 CFM	\$680.



All 3 come with a 2-micron bag.

While it is obvious that these filters are an upgrade on the bag filters noted above, there is no indication of the capture efficiency of these, or any Magnum filters and I did not receive a response to an email that I sent asking for this information.

LAGUNA (SUPERMAX)

1.0 hp	680 CFM	\$650 (Ultimate Tools)
--------	---------	------------------------

As noted above, this comes with a 1-micron bag which independent testing has determined will capture 99% of particles down to 5 microns and 90% of particles down to 1 micron.

b. PLEATED CANNISTER FILTERS

Concerns with bag filters have prompted most manufacturers to offer units with a pleated cannister filter. They typically will have a much higher filtration rating than a bag and the surface area will often be significantly greater which means improved performance and longevity.



The following are a few brands you may want to consider.

MAGNUM

KMS offers 3 Magnum SS-DCs with a cannister filter.

	CFM	Filter	Sq Ft	Price
1.0 hp.	550	1 micron	20	\$500
1.5 hp.	1280	1 micron	80	\$750
2.0 hp.	1600	1 micron	80	\$900



(Capture efficiency is unknown.)

LAGUNA B/FLUX

	CFM	Filter	Sq Ft	Price
1.0 hp.	650	1 micron	17	\$800

Independent test results indicate that this filter will capture 99.97% of particles down to 0.2 – 2.0 microns. (MERV12 rating)



Cleaning Crank

Most cannister filters come with a crank or arm which can be manually rotated to remove dust from the inside wall of the cannister. However, the frequent rubbing against the filter media can cause pin-hole leaks to develop.

The preferred method recommended by many manufacturers including *Oneida and Wynn Environmental* is “pulse cleaning” which simply means blowing compressed air from outside the cannister to remove inside dust. You should use 30 -60 psi and the nozzle should be held 6” – 12” from the cannister to avoid damage.

However, many members will not have regular access to compressed air and even if they do, the ease of using a crank means that they are more likely to clean the filter more frequently. A light touch is highly recommended.

RECOMMENDED UPGRADES TO A SS-DC

If you own a SS-DC, there are two upgrades recommended by virtually all experts. (See, for example, **Soup Up Your Dust Collector** in *Fine Woodworking* at <https://www.finewoodworking.com/project-guides/shop-machines/soup-up-your-dust-collector>)

1. REPLACE BAG FILTER WITH CANNISTER

As is clear from the preceding discussion, cannisters offer a significant increase in filter efficiency over most bags. In addition, most also offer greater filter area which means more air can pass through leading to increased performance and a reduced need for cleaning.

MAGNUM

KMS offers three pleated cartridge filters which can be used to retrofit a DC.

One is a 1-micron filter rated for a 1 hp. DC and offers 20 sq. ft. of surface area but no cleaning crank (\$190). The second is also a 1-micron filter rated for 1.5 – 3 hp. units. It has 80 sq. ft. of surface and a cleaning crank (\$330). The third has a 0.3-micron HEPA filter with 80 sq. ft. and a cleaning crank. (\$500).

(Capture efficiency is unknown.)

WYNN ENVIRONMENTAL

For many years, *Wynn Environmental* has been recognized as providing some of the best cannisters at the lowest prices. (<https://www.finewoodworking.com/project-guides/shop-machines/soup-up-your-dust-collector>). They offer two 35 Series cartridge filters which will fit most 1.5 – 2 hp SS-DCs. (<https://wynnenv.com/woodworking-filters/>)

Their blend filter has 274 sq. ft. of surface area – more than 10 times that of a bag filter - and is test rated at Merv10 (99.99% of 0.5 micron). Their nano fibre filter has 222 sq. ft. of area and is rated at Merv15 (99.999% of 0.5 micron).

These specifications exceed that of locally available cannisters, and at a cost of CA\$300 and CA\$360 respectively, are less expensive.

However, given the size of the cannister, shipping is an issue. I was informed that the shipping costs of either cannister **to Victoria** was **CA\$300** which equals the cost of the Merv10 filter itself!

On the other hand, the cost of shipping **to Blaine, Washington** would be approximately **CA\$51.40!** Blaine was selected on the basis of the cross-border shipping offered by *Seawings Express*. (There should be no duty since the Wynn cannisters are made in the U.S.)

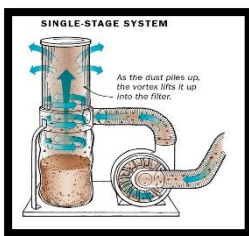
Seawings Express

The disparity in shipping costs is not unusual as many U.S. suppliers of turning equipment offer reduced shipping rates to U.S. destinations. *Seawings Express* is a bonded carrier which offers cross-border shipping from Blaine, WA to their office at the Victoria International Airport. Members indicate that their charges are significantly less than major U.S. shippers. You can find more information at: <https://www.seawings.ca/>

Note: Whichever cannister you purchase, it is likely that the diameter will not match your DC and you will need to add a plywood “doughnut”. This is a simple task and there are numerous online videos which provide advice.



Bottom (Collection) Bag



Whether you have a bag or cannister filter, it is important that you not let the bottom collection bag get too full. Otherwise, the dust will be lifted up into the filter which will quickly plug. Most sources recommend that you empty the bag when it is approximately 1/3 full.

2. ADD A SEPARATOR

Upgrading your filter alone will not solve the problem of clogging and a drop in pressure. While it will take longer to clog since it has a much greater surface area, bear in mind that it is also collecting finer particles. In order to remedy this, most sources recommend that you also add a separator. The effect of this is to essentially transform a single stage unit into a two-stage DC.

While the concept is quite simple, it has a dramatic effect on the efficiency of the DC and the lifetime of the filter since less material finds its way to the filter. It also protects the impeller from damage by large chips or metal items. And, depending upon the set-up, it means that you will not have to struggle with the task of emptying the bottom bag as often.

While there are many ways to add a separator, the following considers three of the most common: a cyclonic separator, a trash can separator and a homemade Thien Baffle.

Note: While any separator will reduce the airflow (CFM) of a DC, one source suggests that this is rarely more than 5%. Having said that, the same source recommends only using a separator on a 1.5 hp or higher unit.

a. CYCLONIC SEPARATOR

These separators provide a true cyclonic air flow which consists of a strong perimeter vortex that sends dust downward and a reversed centre vortex that carries (near) dust-free air to the DC. Filter cleaning can be reduced by up to a factor of 50 while maintaining high CFM performance.



While there are a number of commercial cyclonic separators, one of the best known and highest rated is **Oneida's Super Dust Deputy (SDD)**. (\$260: KMS)

It is made of molded resin, weighs approximately 5.5 lb and is 27" high. **It will capture over 99% of all dust particles.**

Suitable for a 1 – 3 hp. SS-DC, the unit is available with a 5" Inlet (to tool) and a 6" Outlet (to DC) or for a few dollars more, 4" Inlet and Outlet.

While Oneida offers a 17-gallon steel can which is pre-drilled for the SDD and includes a lever-lock lid clamp, at \$225 it is almost as expensive as their separator. Accordingly, you should consider purchasing a HDPE drum or simply using a HD trash can.



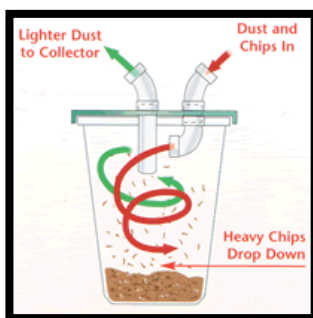
The Oneida website has a template for cutting the holes in a drum lid this as well as other information regarding containers and lids. <https://www.oneida-air.com/blog/dust-deputy-diy-tips-tricks>.

Installation

The Oneida site also contains some valuable information and suggestions. <https://www.oneida-air.com/blog/super-dust-deputy>. While the following video is a bit “rambly”, the early portion does offer some good ideas for installing the SDD on a trash can. <https://www.youtube.com/watch?v=NB9kc9pWjp0>.

b. TRASH CAN SEPARATORS

There are a number of manufacturers that offer a “trash can” lid that will function as an inexpensive separator.



While they do produce a modest cyclonic action, they are nowhere as effective as a true cyclone. As one study noted, *“The steeper spirals on a [true] cyclone separator slow airflow quicker than the more passive [trash can] lid models. Debris falls out of the airstream sooner and more efficiently, dropping into the collection drum or bin.”*

These separators must be emptied well before they are full. Trash can lids were initially designed as separators for shop vacuums which have far less suction than a DC. As the amount of air in the can is reduced, the power of a DC will begin to suck dust past the separator defeating the very purpose of installing it.

In fact, there are mixed reviews on the effectiveness of these units – especially when it comes to fine dust.



Many of these have the inlet and outlet filters aligned with one another on the sides (left) which means that fine dust will be pulled out before it has a time to settle.

Others such as the Veritas Cyclone Lid (LV: \$70) have the outlet in the centre of the lid which is said to be more effective.



Note: You must use a heavy-duty trash can – a thin-walled plastic can will collapse from the pressure.

The higher the can is the better as it reduces the likelihood that the DC will simply pick up the fine dust at the bottom.

c. THIEN BAFFLE

This homemade separator was developed by Paul Thien in 2007 and consists of a two-part baffle unit inserted in the top of the collection barrel.





The inlet port consists of a 90-degree PVC coupling which is precisely located to push the incoming dust to the edge of the container (previous photo). As the air velocity decreases, the dust falls through the partial perimeter slot (photo left) in the lower baffle plate.

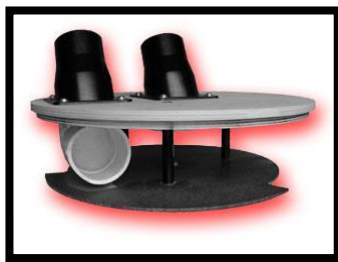
The key point is that the lower plate prevents the DC from sucking dust up from the barrel once it has fallen through the perimeter slot. For a great video of the baffle in operation, go to:

<https://www.youtube.com/watch?v=3QCAOWSqrko>

There are two advantages to this solution. The first and most obvious is cost. Leaving aside the cost of trash can, the materials to build one are a few pieces of MDF or plywood, 3 long bolts and 2 PVC fittings - likely no more than \$30.

The second is its impressive efficiency. In tests conducted by *Fine Woodworking* in 2013, the baffle performed much better than a trash can separator and on a par with the *Super Dust Deputy* – although it did require a higher CFM due to the resistance caused by the baffle.

However, the authors added one important recommendation. When you clean the filter, some of the fine dust will fall down inside and rest on the top of the lower baffle. When the DC is turned on, this will simply be sucked back into the filter. Thus, they recommend that the fine dust on the baffle should routinely be removed using a shop vac.



You can find more information than you ever need on Their's website and the discussion forum at:

<https://www.jpthien.com/cy.htm>.

An internet search will reveal multiple methods of locating the dust can.



TWO-STAGE DUST COLLECTORS

As noted above, the essential aspect of a two-stage dust collector (TSDC) is the presence of a separator. Rather than adding a pleated cannister and a cyclonic separator to a SSDC, you may want to consider a commercial TSDC.

(TSDCs for a central shop wide system is beyond the scope of this note. The following only considers portable cyclone DCs.)

Depending upon the CFM, these can be used for a single machine hook up or a fixed system for up to 3 machines with appropriate blast gates.

The following are a few of the units you may want to consider.

ONEIDA MINI GORILLA



This unit has a 1.5 hp motor and delivers 583 CFM (actual). It has a 5" inlet port and a HEPA filter rated at E12 which means it will capture 99.97% of 0.3- micron particles. (\$2,580: LV)

On-line reviews give this unit a very high rating.

MAGNUM

KMS offers the Magnum Industrial 1.5 hp unit (\$1,500). It is available with a single 6" or 2 – 4" inlets and is rated at 950 CFM (actual). It is quieter than the Mini Gorilla (75 vs 83 decibels) but is much, much heavier (**331 vs 85 pounds!**).

It comes with what is described as a "1-micron extra-fine filter" which can be upgraded to a HEPA filter.

(Capture efficiency unknown)



OTHER ISSUES TO CONSIDER

The following are some other issues that you should consider when using a dust collector.

1. DUCTING SIZE

On its face, bigger is better when it comes to the diameter of the ducting. Bill Pentz offers the following evidence:

*...a 1.5 hp dust collector that can move a maximum of 1100 CFM moves far less air than that maximum depending upon what sized ducting we use. ... With the added overhead of our filter and minimum ducting, that pressure is only ample to move about 800 CFM when hooked up with a short piece of 6" flex hose. That pressure will only pull about 550 CFM when connected with 5" flex hose and **only about 350 CFM when hooked to a 4" flex hose.***

However, the increase in efficiency will depend entirely on the CFM capability of your DC. If the ducting exceeds the capacity of your DC, the “transport velocity” will be too slow meaning that dust will either settle in the ducting or you will experience significantly reduced capture. For example, it is unlikely that a 1 hp DC rated at 500 CFM will collect dust using a 6” duct.

2. DUST HOOD

In order to capture fine dust particles at the lathe you should use a dust hood. While the speed of the particles is not as high as it is from a table saw or router, the area of dust dispersion is generally much larger.

And, as is well illustrated by a shop vacuum, the suction drops very rapidly as one moves away from the intake. One study found that at a distance equal to the diameter of the inlet, the pressure is only 10% of that at the inlet. This means that if you are using a 4” duct and it is located more than 4” from the source of the sanding dust, capture will be severely reduced.

While the **Clearvue** website states that the **optimal** size for a dust hood should encompass a radius of 15” from the dust source in all directions, any increase in hood size beyond 4” will greatly improve fine particle collection.



As for commercial plastic hoods, a popular one is the large Gulp form which is 12” x 16” (\$25: KMS).



Others simply rely on somewhat smaller hoods (\$11: KMS) or a metal duct register boot (\$6).



An internet search will reveal a variety of methods for mounting a dust hood.



3. SANDING SPEED

The efficiency of a DC in collecting fine dust particles will be affected by lathe speed when sanding. Obviously, the slower the lathe speed, the slower the airspeed of dust particles and the greater the collection.

There are a number of other reasons to sand at a slow speed. Higher speeds create an air cushion which causes the sandpaper to “skate” over the surface. They also create more heat which can not only cause “heat cracks” but may also “melt” the bond between the grit and paper, allowing grit particles to embed themselves in the wood. High speed and heat can also burnish the wood which will hinder both sanding and finishing.

While there are many different views depending upon the wood species, type of turning, and abrasive grit, most sources suggest a top speed of 250 – 300 rpm – especially for grits under 220.

4. COMPRESSED AIR: NOT

As you progress through the grits, it is important that you clean the piece after each grit to remove any large abrasive particles. Some turners recommend using compressed air to do so.

Needless to say, doing so will send fine particles of dust throughout the shop. A safer, equally fast and quieter alternative is to use a tack cloth.



5. THE ULTIMATE DUST COLLECTOR!

The cheapest and most effective method of removing airborne dust is to use a box fan vented to the outside through a wall or window. Box fans typically run from 1500 – 2500 CFM and can cost as little as \$35. While it may not be practical for year-round operation – at least until global warming takes off - it may be attractive for 6 months of the year or so.

Safety Note

With this level of air movement, you must have a corresponding hole on the opposite side of your shop for air intake. **Furthermore, it is dangerous to use this method if you have a gas-fired appliance in your shop, basement or garage as it can cause a backdraft.**

SHOP VAC FILTER BAGS

If you use a shop vac to clean your shop floor, you will be well aware of how often you need to clean the filter and what a mess it can be at times. While you can buy dedicated shop vac filter covers, Graeme Evans hit on a better alternative.

He uses reusable bags from Canadian Tire called *Skimmer Socks* that are designed to protect pool filters. They are less expensive (5 bags/\$15) than dedicated shop vac filter covers and, even though they are a bit smaller, he prefers them.



The photos below show the results before and after using these filters.



PARTING OFF

Thanks to the members of the Executive who continue to forgo turning time in order to keep the Guild going – especially our webmaster Virginia! And a special thanks to Tim Soutar for providing a great demo on incredibly short notice!

CONCLUDING THOT

