

The Basics of

by Jim Burke

Sawdust, that byproduct of cutting picture frame mouldings, can end up everywhere in your operation. If you're cutting wood, MDF, or poly mouldings, it will eventually end up on glass being cleaned, on art being mounted, and generally collect on everything you don't want it to get on, including finished products. It can reduce the life of the electric motors in your saws, and it gets into the lungs of the people working at your business—including yours. This costs you money. Whether it's additional time for extra cleaning, returns of blemished product, or lost production due to sick employees, you really can't afford it. When you weigh those negative impacts of dust, the decision to buy a good dust collection system makes a lot of sense.

Whether you have one saw or dozens, the approach to finding the appropriate dust collection system is the same:

- Find out how many cubic feet per minute (CFM) each of your saws requires for effective dust evacuation. A saw manufacturer can tell you how much that is, or you can check the instruction manual or sales brochure for the saw(s) you own. Most commercial double miter saws require 750 to 850 CFM per saw.
- Decide what to do with the chips that are created when cutting narrower mouldings. You can: (a) keep all the chips in the saw, (b) allow some chips to exhaust with the sawdust, or (c) allow most or all of the chips to exhaust with the sawdust.

Extracting Dust and Chips

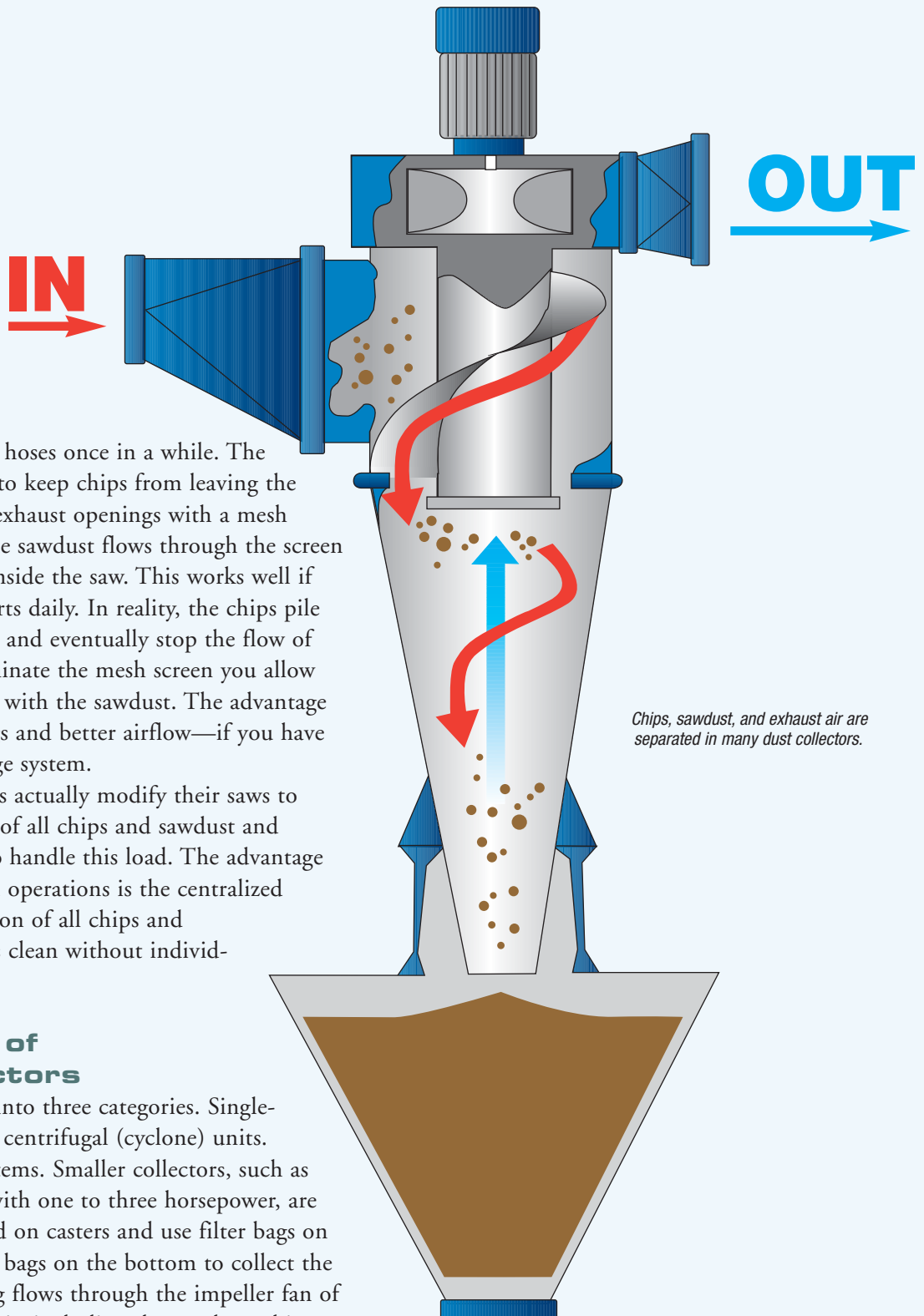
Double miter saws use different ways to extract the dust and the chips. For open frame saws with fitted exhaust ducts, small chips can escape with the sawdust. Most of these chips fall into the bin below, but a fair percentage will follow the airflow in the exhaust ducts. This is the case, for example, with the Pistorius MN series saws.

Enclosed cabinet saws with chip chutes usually have exhaust ports in the side or back of the cabinet, so the chips don't get extracted as often, but they can



A standard single-stage bag unit.

Dust Collection



Chips, sawdust, and exhaust air are separated in many dust collectors.

get into the exhaust hoses once in a while. The most common way to keep chips from leaving the saw is to block the exhaust openings with a mesh screen. In theory, the sawdust flows through the screen and the chips stay inside the saw. This works well if you monitor the ports daily. In reality, the chips pile up against the mesh and eventually stop the flow of sawdust. If you eliminate the mesh screen you allow more chips to move with the sawdust. The advantage would be fewer clogs and better airflow—if you have the correct dual-stage system.

Some companies actually modify their saws to extract 100 percent of all chips and sawdust and design the system to handle this load. The advantage for large production operations is the centralized cleanup and collection of all chips and dust. Each saw stays clean without individual clean out.

Categories of Dust Collectors

Dust collectors fall into three categories. Single-stage, dual-stage, or centrifugal (cyclone) units.

- Single-stage systems. Smaller collectors, such as portable units with one to three horsepower, are usually mounted on casters and use filter bags on top with canvas bags on the bottom to collect the dust. Everything flows through the impeller fan of a single-stage unit, including the sawdust, chips,



A single-stage cartridge unit.

- and exhaust air. This can create a problem with wood or aluminum scraps damaging the fan.
- Dual-stage barrel units. These separate the exhaust air from the heavier chips and sawdust within the housing and only allow smaller dust particles through the fan to the filter bag.
- Centrifugal or cyclone units. These dual-stage systems are more efficient in their separation of exhaust air, sawdust, and scrap chips through the design of the external housing and two-stage fan.

Analyzing Your Needs

Although pricing may seem favorable for single-stage units, most don't perform well for commercial picture framing needs. The more expensive units that use cartridge filters and plastic bags or canisters are acceptable for a single saw operation. To collect chips along with sawdust, it would be best to install a separator barrel with a special top that allows the air and dust to flow across while the chips fall into the container.

The best solution for heavy chip collection is a dual-stage dust collection system. If you have one or two saws, you can get by with one barrel-type, dual-stage dust collection unit of two to three horsepower for each saw. If you need to have the dust collector located any distance from the saw, use the correct



A typical five horsepower centrifugal (cyclone) unit.



A dual-stage barrel unit.

size of pipe or tubing for that distance. For example, a 6" diameter pipe would be needed for a 20' run to work correctly because 4" diameter pipe isn't large enough for that length.

For two to three saws, consider a centrifugal unit of 3 to 7.5 horsepower to get the best results. This will generate 1800 to 2400 CFM and offer two-stage separation for the chips. Such smaller centrifugal systems can be located close to the saws if needed and require only a minimum of piping. They can be freestanding with simple stands available from the vendors.

When you have more than three saws, it becomes more cost-effective to use a central system rather than individual units. For four or more saws, consider a central centrifugal unit of more than 10 horsepower sized properly for your present and future needs. Install the correct pipe sizes and install blast gates for each connection so that any saw not being used can be closed off from the system.

Designing a system properly in the beginning will save frustration and money down the road. Size the main unit larger than needed so that any additional saws you add in the future won't require the added expense of redesigning your dust-collection system. Some vendors will do the engineering for you for large systems and recommend all the components and piping needed for your requirements and future needs.

If you're in an industrial location where outside exhaust isn't a problem, you could consider venting the filtered outlet air to the outside of the building. Check local codes when in doubt. In most cases, however, you will need

to get a unit with filters for inside exhaust. If noise is a problem, build a room around the collection system or ask the vendor about exhaust silencers that can reduce the noise by up to 50 percent.

Finding a Specific System

There are many resources for dust collection systems. Some will be familiar if you own Pistorius or CTD saws. Both companies can supply you with product or recommendations. Woodworking suppliers like Grizzly or industrial suppliers like Grainger also offer dust collectors. Just remember to check the CFM outputs. Commercial companies that specialize in larger systems can be found at www.dustcollectingsystems.com. For all the names you must view

page two as well, because it includes many dust collection companies both large and small around the U.S.

The bottom line is, don't skimp on dust collection. Get a good system that fits your requirements. Help insure the health of your workers and keep the environment clean, both inside your building and out. ■

Jim Burke owns Machines Etc., a sales and consulting company based in New Bedford, MA. He started in the picture framing industry with Arquati Moulding in Cleveland as general manager. For the past 25 years he has sold and serviced all types of machinery for cutting and joining frames and cutting mats. He has also sold web control machinery to paper mills, tire cord manufacturing, textiles, plastic film extrusion, and paper converting companies throughout the Midwest.

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