

Issue 34

The Triton Dust Bucket Cyclone Mod

WHY ?

While not getting into a discussion about the health problems caused by wood dust, let's just say that it's a very foolish woodworker who ignores the problem and doesn't have some form of protection. There's the Triton Respirator, 1 or 2 HP Dust Extractors like those sold by Woodworkers Warehouse, Carba-tec and others. And then there's the Triton Dust Bucket, all designed to minimise the amount of dust getting into your lungs.

The larger extractors use 4" ducting and are made for removing larger shavings, like those you get from a thicknesser, as well as the dust from Table Saws etc. They move very large volumes of air but do it at a reduced speed.

The Triton system is almost solely an 'above table' fine dust extractor which is also very handy on the router table or hand held tools like a sander. The narrower pipes and the attached vacuum create a much faster (but lower volume) air flow, which is ideal for the fine dust created by these power tools. The bucket's job is to stop all but the very finest of dust particles entering the vacuum.

The Triton is efficient at this but only up to the point where the dust gets impregnated in the filter on the underside of the lid. At this point, the suction drops dramatically and requires you to 'tap' the lid a few times to shake the dust back down into the bucket. Eventually, the filter requires a complete clean, which is inefficient and time consuming. You have to keep checking

it regularly to make sure your filter is clear. As it becomes clogged, the airflow reduces and the overall dust collection reduces dramatically. This means more dust in the air and in your lungs.

CYCLONE THEORY

The cyclone modification sets out to solve this problem. Many, if not most, properly set up workshops have a cyclone type system installed between their machinery and the dust extraction unit. These do exactly the same job as our Triton buckets, but do it much more efficiently.

The cyclone modification's main benefit is in allowing the complete removal of the under lid filter. Without it, there isn't any clogging and no reduced airflow. But how then does this stop the dust reaching the vacuum and causing the same problems there, resulting ultimately in a dead vacuum unit. Well, that's where the 'cyclone' idea comes in.

The dust is drawn into the bucket and as it enters the lid, it comes in via 90 degree elbow. This means the dust is set on a spinning motion as it goes around the inside of the bucket. It can get very technical from here but basically, the force of this spinning air (like a cyclone) pushes the dust particles out towards the outer edges of the cyclone where they come into contact with the bucket side walls. The air and particles in contact with these outer sides move slower than the air inside due to friction. The force of gravity then draws these slower moving particles downwards towards the bottom

of the bucket. They eventually reach the funnel and fall through to the container underneath.

At some point inside the cyclone, the spinning air reverses direction (called the neutral point) and air goes out through the central pipe to the vacuum. This air is almost completely free of dust particles so you get almost none in your vacuum, keeping the vacuum clean while maintaining full suction.

Because no system is 100% efficient, you will need to clean out your vacuum filters on a regular basis. Please do this outside and with other protection like a respirator or dust mask. This is usually very fine dust and is considered dangerous.

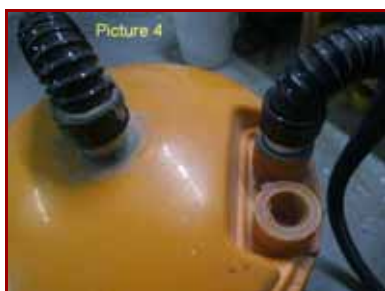
Disclaimer : Wood dust is considered dangerous. Any modification to the standard bucket is to be undertaken at the sole discretion of the individual. The Triton Woodworkers Club Holmesglen Inc. only provides this information as a service to members and provides no data as to the efficiency of either the standard dust collection system or the cyclone modification. Members undertake any modifications entirely at their own risk.

Acknowledgement:

The first demonstration of this modification was done by former member, Peter Jurrjens. The following instructions show the steps Peter took to create his first bucket but contain some extra information and more photos than when first printed in our October 2003 Newsletter. Many buckets have now been modified using Peter's method, while others have adapted their own versions with success. Thanks Peter.

The Triton Woodworker

Dust Bucket Cyclone Mod - How?



Follow these instructions in conjunction with Diagrams A and B

There are two aims to this modification. Firstly to insert a plastic funnel into the existing bucket and then to attach a second collector to the bottom for the funnel to feed into. The second container can be a plastic bucket or an old 20L paint tin as shown here.

Using the Triton jigsaw attachment or hand held jigsaw, cut out 3 particle board (or mdf) rings to the sizes as shown in the diagram. Alternatively, these can be easily be done on a bandsaw using a circle cutting jig (pic. 1).

One smaller ring can be cut using the centre off-cut from the larger ring. (pic. 2)

The large ring will be sitting inside the bucket so test that the fit is right at this point and shape as necessary. Attach the funnel to the inside of the large ring using tacks or small nails and seal with silicon, but don't put it into the bucket yet.

Remove the sliding red closers from the two outside inlet holes of the bucket lid and remove the filter from inside the dust bucket lid.

You have to enlarge the central hole and one of the outside holes in the bucket lid to 40mm so that the 40mm pipe joiners fit snugly inside them. This is easily done with a hole saw.

Glue a 40mm pipe joiner (40mm outside diam & 25mm inside diam) into each of the two holes you drilled in the lid of the bucket using PVC Pipe glue.

From a 400mm length of 25mm (outside diam) plastic pipe, cut off 3 small pieces of 45mm each in length.

Take two Triton bayonet hose adaptors (part numbers CMA 033), grind off the protruding locking bits. Glue one of these adaptors to one of the small sections of the 25mm pipe.

Then, from the top, glue this small pipe and attached adaptor into the pipe joiner which is already glued securely into the centre hole of the bucket lid.

Repeat the process, again from the top, for the other bayonet adaptor. Glue it to another of the small sections of pipe and glue this assembly into the outer pipe adaptor, which was previously glued into the lid. (see pics 3 & 4)

Seal these and any other openings in the lid with silicon.

On the inside of the lid, glue the other small section of 25mm pipe into the outer pipe joiner and then glue the 90 degree adaptor to this section of the outside pipe. Make sure the elbow faces parallel with the side of the bucket. You may need to grind some of the side of the 90 degree elbow to allow the lid to be fitted back correctly.

The remaining length of 25mm pipe (approx 260mm) is glued from inside the lid into the centre hole pipe joiner. (see pic. 5).

Again, seal all these, including the spare outer entry hole with silicon, so that the only place for air to travel is through your central pipe and the 90 degree elbow.

Cut a hole in the centre of the bottom of the bucket to match the inside diam. of the small particle board ring (110mm). Cut a similar hole into the lid of the paint tin.

The Triton Woodworker



One of the smaller disks sits on the inside of the bottom the bucket and the other, under the lid of the paint tin. These are bolted all the way through so that the 2 disks, the bucket and paint tin lid are all the one piece. Again, use silicon to seal any gaps. (pic. 6)



The large ring with the funnel attached can now be pushed into the bucket. Push it down all the way until it protrudes through the bottom of the bucket and into the top of the paint tin. (see photo 6 & 7).



Seal the rim of the funnel with silicon and screw the ring in place from the outside (pic.7). Turn the bucket over and cut off the narrow end of the funnel as in photo 6. Seal the gap between the funnel and the ring with silicon.

In photo 8, you can see the white ring around the top of the funnel. This is more gap filler which was added later to remove the ledge created by the large ring. It makes a gradual slope for the particles to slide down on rather than have them sitting on that ledge. Builders bog is a good filler



Ready to go, your home made cyclone

The paint tin can be sourced from a good local paint shop or local painter. They often throw them away.

The bayonet adaptors come with some other Triton attachments so you may already have them. If not, they can be purchased from Triton. You must order through a supplier like Bunnings to get these. Since the GMC take-over, Triton no longer sell spares direct to the public.

for this job. The gap filler took over a week to dry. The bucket can now be attached to the paint tin by using the standard metal holding clamp which comes with the tin.

Place the lid back on the top of the bucket and screw the 2 flexible hoses on to the bayonet hose fittings.

Connect the outside hose to your Workcentre or Router and the centre hose to your vacuum cleaner.

You will notice a marked improvement in suction and very little dust getting into your vacuum.

PARTS LIST

FROM BUNNINGS

400 MM Length of 25mm (o/side diam) plastic pipe

2 Pipe joiners for above (40mm O/side Diam)

One 90 degree elbow to suit the 25mm pipe

FROM REPCO or SUPERCHEAP AUTOS

220mm plastic funnel

FROM TRITON

2 bayonet adaptors, part no.s CMA 033 (order through Bunnings)

OTHER ITEMS

Silicon

Chipboard / mdf off-cuts

Nuts, bolts & washers

Self tapping screws