A Downdraft Sanding Table

This shopmade unit conquers dust without breaking the bank

BY PETER BROWN

My shop was originally a 20-ft. by 40-ft. hog barn. In the early years, before it could really be called a shop, I conveniently ignored the dust created from sanding. However, after I added a floor and finished the interior, I became more conscious of the dust and began to take large sanding projects out to another barn, where I could let the dust fly. The solution was clear: I had to find some way to collect sanding dust.

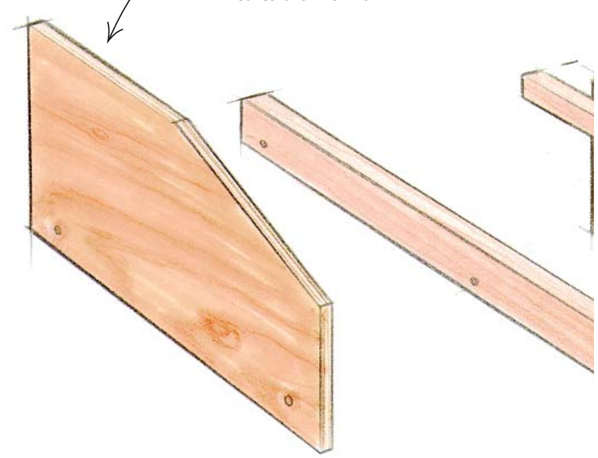
When I first noticed downdraft sanding tables that were for sale, I was intrigued. They were just what I needed, but I could not afford any of them. It was then that I decided to make my own downdraft table utilizing the central dust-collection system in my shop. I use a shopmade system built with the motor and impeller from a portable Dust Boy—rated to move 1,100 cu. ft. of air per minute (cfm) at a velocity of 5,400 ft. per minute (fpm)—adapted to an Oneida Air Systems cyclone. I was confident that by locating my 2-hp Dust Boy close to the downdraft table, my system would do the job.

I based the size of the sanding tabletop—24 in. deep by 36 in. wide—on the average dimension of my workpieces. I then calculated the area of the tabletop (864 sq. in.) and subtracted the area taken up by the grid material (330 sq. in.), leaving an open area of 534 sq. in. This is equivalent to a 26-in.-dia. duct, and I began to get a feeling that I might have a problem. With even a minimum 3,000-fpm velocity at the table, I would need a flow rate of more than 10,000 cfm. All of a sudden my central dust-collection system looked very inadequate.

Undaunted, I resolved to give it a try regardless of what the calculations told me. I decided to build the framework of the table and then make cardboard mock-ups of the interior to determine the best flow characteristics. I built the sanding table entirely from scraps, and the size of the scraps dictated the size of the components.

After making the frame, I made the first mock-up of the table interior. The mock-up had a flat bottom with straight sides and an 8-in.-dia. duct at the bottom of the table. Regardless of what adjustments I made, the airflow wasn't evenly distributed across the table: It was fair near the outlet but poor elsewhere. For the second mock-up, I changed the outlet duct from the round to a standard 4-in. by 12-in. heating duct made of sheet metal, and I moved the outlet to the back of the table. I sloped the interior bottom from front to back and added the side pieces that slope toward the center and the back of the table.

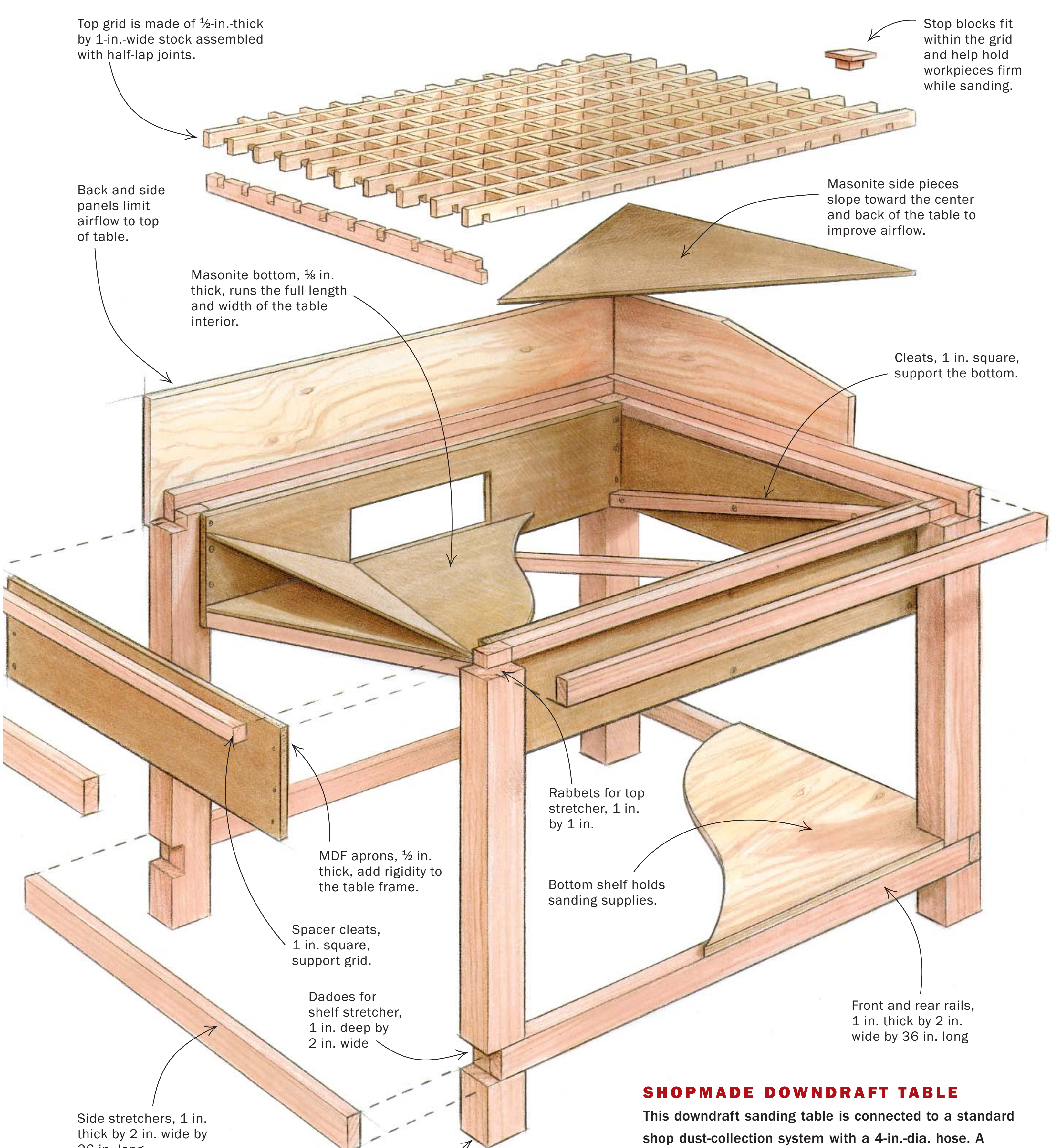
An inexpensive connection. Brown used a standard sheet-metal air-conditioning duct to tie the sanding table to his shop dust system.



The second mock-up made a significant improvement in the airflow, giving me good dust collection. I replaced the cardboard mock-up with ⅛-in.-thick Masonite. The addition of the ½-in.-thick MDF back and side apron pieces at the top of the table adds rigidity to the frame and keeps stray dust within the collection area. □

Peter Brown works as an engineer developing repairs for jet engines.

Photos: William Duckworth



SHOPMADE DOWNDRAFT TABLE

This downdraft sanding table is connected to a standard shop dust-collection system with a 4-in.-dia. hose. A sheet-metal fixture at the back of the table (see the bottom photo on the facing page) is a standard 90° heating and air-conditioning duct.

Drawing: Bob La Pointe