

# Plumbing a Shop for Air

A simple system puts access  
to air where you need it  
and ends the hassle  
of tangled hoses

BY ROLAND JOHNSON

I've used compressed air in my shop for more than 20 years. Originally, I bought a compressor for a spray gun and an air-powered sander, but over the years I've added brad and finish nailers, a vacuum-bag veneer press, vacuum clamps, drills and routers. Compressed air, like electricity, is a wonderful source of power.

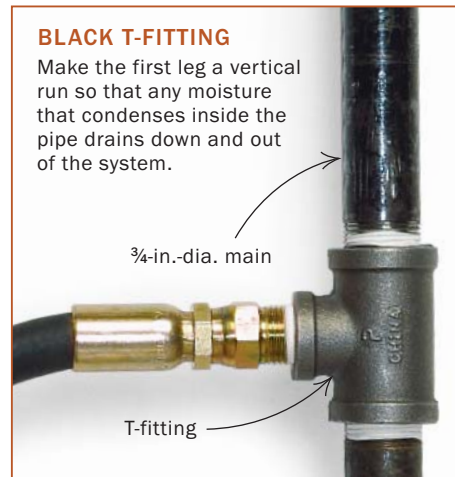
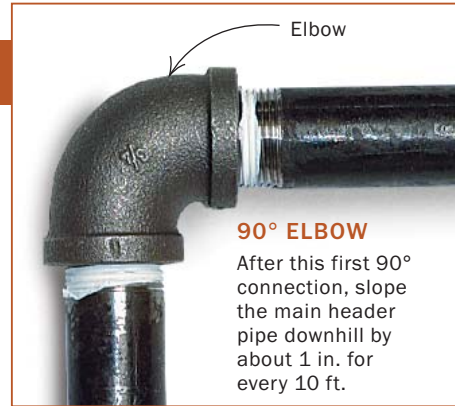
But many compressed-air systems are inadequate. A good one will supply an ample volume of air at a consistent pressure, free of moisture and particulate matter. With the right design, even a small compressed-air system can be effective, efficient and clean. The diameter and length of the pipe that you use affect the pressure and volume of air it will deliver. You need larger diameters for longer runs to avoid drastic pressure drops in the system. Compressor manufacturers are a great planning resource and offer free charts and tables that you can use to size a system for your shop.

## Iron pipe works best

A number of different kinds of pipe will work well to distribute compressed air inside a

## NAME THAT FITTING

When you shop for plumbing supplies, have in hand a sketch of the system you're building and a parts list of every length of pipe and fitting required. Knowing the right names for fittings ensures that you'll get what you need.



## THE AIR SUPPLY

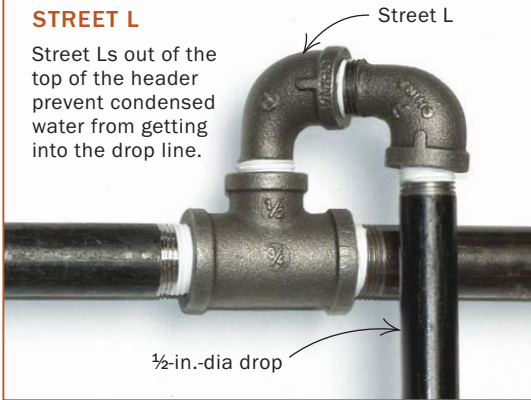
Use a flexible hose to connect the compressor to the first pipe. The hose will prevent the noise and vibration of the compressor from spreading to the plumbing system, and the first vertical pipe will remove most of the moisture from the air.





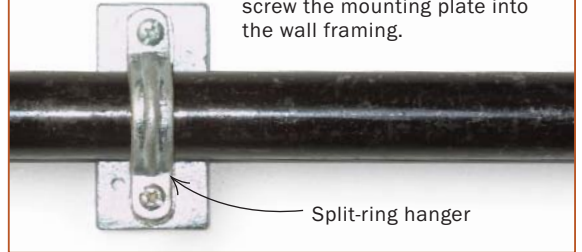
### STREET L

Street Ls out of the top of the header prevent condensed water from getting into the drop line.



### SPLIT-RING PIPE HANGER

The split-ring hanger is fairly easy to assemble and take apart. For a strong connection, screw the mounting plate into the wall framing.



### UNION

Unions minimize the hassle of adding or removing parts to a system.



shop. Copper pipe is relatively inexpensive, but its main drawback is that it requires a plumber's talent for sweating joints, and you need a torch to do that. In new construction this may be less of a hazard, but in older shops, sawdust settled into hidden crevices can be a real danger. I would never use rigid PVC because a sharp blow from the edge of a board could cause it to rupture and send shrapnel flying.

I chose black iron pipe (3/4 in. dia. for the main header pipe and 1/2 in. dia. for the relatively short drops) because it's the most durable and offers the most flexibility for any future changes to my system. You can buy precut and threaded lengths of pipe and all the necessary fittings at most hardware and home stores. I bor-



### Filtered air: You don't need it for everything

At least one drop line off the main header pipe ought to be equipped with a filter and regulator. I use a Sharpe (800-742-7731) model 606A air-control unit that has a reusable filter and a water drain. Expensive desiccant driers can extract remaining moisture and oil droplets from the compressed air, but unless you're setting up a regulation spray booth, the driers are overkill.



**UNFILTERED AIR**  
Unfiltered air is usually fine to use with blow guns and tire-inflation chucks.

**FILTERED AIR**  
Use the filtered line where you need it most for pneumatic tools and spray finishing guns. Filtered air will extend the life of these tools.

Spray gun



rowed a pipe threader and bought bulk lengths of pipe. That way I could cut the pipe to the exact lengths I needed, and I saved money to boot. Adding a few strategically placed threaded couplers or T-fittings to the system makes an iron-pipe system easy to modify or add on to as needs dictate.

### The system design is simple

A continuous-loop system, in which the pipe returns all the way back to the first drop line, is the best for keeping the pressure and volume consistent. But such a system would have required a lot more pipe than I had wanted to invest in, so I chose a system that dead ends, and it's been plenty adequate for my needs. Whichever design you choose, you can control moisture and particulate matter fairly easily.

Water runs downhill, so you can get rid of most of it by sloping the main header pipe away from the compressor, using gravity to your advantage. Install ball valves at the end of each vertical drop line off the main header for drainage, and use a filter where needed to eliminate any remaining moisture and particulate matter. A good maintenance practice of opening the ball valves daily and regularly draining the compressor tank will go a long way toward keeping the system dry and clean.

Start with a ball valve attached to the compressor tank that can instantly shut off the airflow

from the tank to the system, and use a flexible hose (rubber, metal-clad or clear plastic) to connect the compressor to the first vertical length of pipe. The hose must be at least as large in diameter as the air outlet of the compressor. The flexible hose eliminates the transmission of vibrations that can cause undue noise and that could otherwise ultimately damage the piping system. Connect the flexible hose to the pipe with a T-fitting. From the T, one pipe extends up to meet the header that supplies air to all of the drops, and a second pipe extends down to another ball valve that is used to drain moisture from the system. Locate the main header pipe as close to the ceiling as possible.

Install T-fittings in the header wherever you need a drop line to bring the air down from the header to where it will be easy to access with a quick-connect hose coupler. To minimize moisture getting into the drop lines, come out of the top of the T-fitting in the header by using two street Ls that create a 180° turn. Add another T-fitting in the drop to tap the air at a convenient height off the floor where you need it, and install a ball valve in that horizontal air supply so that you can shut off the air to that service without disrupting airflow to the rest of the system.

### Add filter/regulators where you need them

For most shops, a relatively inexpensive combination filter and regulator is all you need for clean, dry air. I use a unit that has a reusable filter and a water drain (facing page).

You also can add an oiler to a dedicated air drop line if you use that line to run only tools that need to be oiled regularly, but I would advise against it. For one thing, it would be easy to contaminate a hose or a spray gun accidentally if it were inadvertently hooked up to this line. Also, for most tools that need oil, it's enough to add a few drops directly into each tool as you use it. □

*Roland Johnson builds cabinets, restores old cars and tinkers with his tractor on a farm in central Minnesota.*



Pneumatic disc sander

Blow gun

Pneumatic nailer



#### BALL VALVE

Use a ball valve to control airflow to control part of the system and to terminate all vertical runs so that you can drain any residual moisture.