

Some improvements, once made, may appear obvious, but they weren't obvious enough to the machine's designers at the time to incorporate them! Some require "out-of-the-box" creative thinking where the adventure is more like exploring possibilities, e.g. it is possible to convert the Mark V into a metal milling machine? A metal-cutting band saw? Implicit in exploring new ideas is the notion of "failure." I've had plenty of these and will briefly mention design options doomed to failure or that just didn't work for me.

I hope in this Part One to give you a preview of some, not all, of the specific improvements I've made and extensively life-tested on my old machine. Should you elect to make any of these on your old Mark V, the usual cautions apply for checking whether your machine is the same as mine, whether dimensions were changed on yours, etc. The details of "how-to" for the improvements will be in later parts of the series.

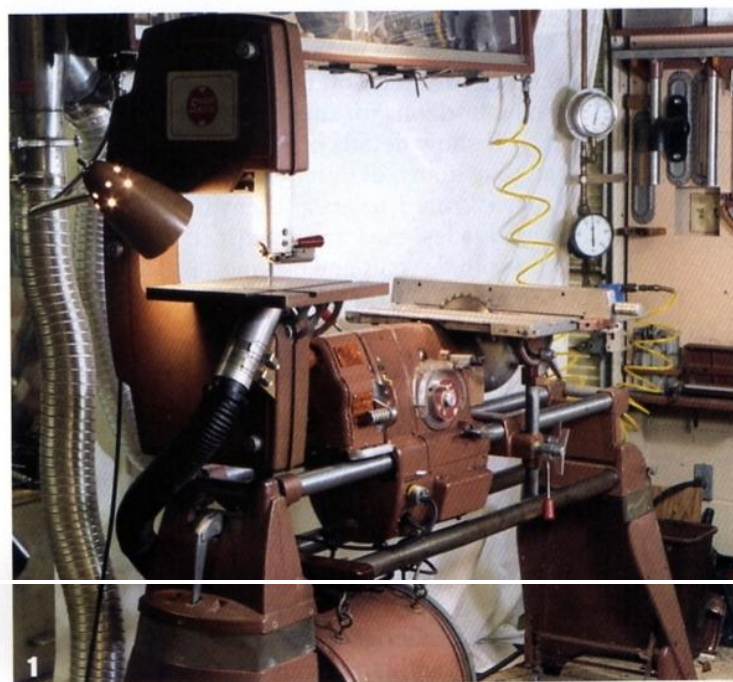
The issue of availability of old Mark V machines will surely arise unless you already have one. Here in north central Florida, I've seen these machines available from \$100 to almost new prices. I've helped two friends find and buy complete machines with accessories for \$500 each. The classifieds ads under "Machinery" are a good place to watch. These old machines are restorable with joyful patience, and I'd certainly go that route again if I'd decided to have a Mark V with some or all the improvements to be presented in future issues of *HSM*. But if cost is no problem for you, just buy a new one – now at thousands of dollars – and improve it! And don't forget that no machine is perfect, even a new one.

Finally, lest some readers fear I'm trying to turn our wonderful *HSM* magazine into a woodworking one, please rest assured that virtually all work ahead is metalworking. Some of it is truly precision metalworking, as will become evident.

THE WHOLE MACHINE

Photo 1 shows my Shopsmith Mark V multipurpose machine as of about 2004. If you are unfamiliar with this kind of machine, please note its minimal foot print – about 7-feet × 3-feet at the most. It's slim enough to fit between the doors in my former two car garage, long ago converted to shop space. In today's world of \$150/ft² for new house construction here in North Central Florida, the small footprint is a major financial plus. Do the math for the floor space necessary for a separate band saw, table saw, disc and belt sander, turning lathe, and drill press, and you'll be impressed with the feasibility of one of these little machines with a small footprint for a one-man home hobby shop.

Also note in Photo 1 that there is no tool or accessory storage beneath the machine, where they quickly become loaded with sawdust. Instead, many of the needed small accessories are in the small cabinet above the machine. Its sliding *Plexiglas* doors do an excellent job of keeping tools clean. Underneath provides mount places for magnets to hold hex wrenches, a crescent wrench, and other frequently used tools for the Shopsmith.



To the right is a custom made rack for storing some of the frequently used accessories. To its left are two large pressure gauges. These monitor the shop air system. One of its outputs is via the yellow air hose – a great way to quickly clean the entire machine of collected sawdust. Dust respirators to be worn during air blowing are in a stainless steel storage box, top right. And don't forget to wear safety glasses with side shields when blowing. Thus, the most commonly used tools and accessories for the machine are within an easy arm's reach.

The long silver snake on the left is one of the drops for my shop central vacuum system completed in 1997. It can easily be connected to the Shopsmith to suck off most, but not all, of the dust. I'd found, for me, it was absolutely essential to carry away the "fine dust," which is what irritates and damages the lungs.

Underneath the machine is an early Sears industrial vacuum cleaner. More on the Vac at the end of this article.

Look closely on the left side of Photo 1 and you'll see my homemade gooseneck lamp wrapped around the Vac drop. It's a nice addition to the band saw that allows me to see where the saw line is. All the above are the peripherals surrounding my Shopsmith to make it easier, safer, and more convenient to work with.

Now let's examine the main machine. My machine is like no other Mark V you've ever seen! In the first place, the height has been adjusted for a tall person. Please note in Photo 1 that the stainless steel strips about 3" wide at the machine's base. This improvement eliminated my sore neck and back from hunching over a machine whose height was set by the designers for short people.

Look closely again at Photo 1 and you'll see my MOD II Speed Reducer on the left side of the machine's headstock. This interesting and very challenging