

Wood burning, Background, Techniques and Other Issues

This is the first of a three-part series on wood burning. In this first section, we will cover how wood burners work and some of the concerns when purchasing a unit. In the second part we will discuss using the burner, some techniques and safety concerns. In the final segment we will talk about some of the variables to consider. This article is not intended to endorse any product or company. It is reprinted with the permission of and thanks to Steve Colaguori and the Colwood company <http://www.woodburning.com/>

How wood burning Units Work

Virtually all of the modern wood burning units are constructed in the same manner. A transformer provides the power and is controlled by a device not unlike a light dimmer that passes the power to a hand piece cord where a burning pen and tip are attached. The transformer's purpose is to step down the voltage to a usable level that is regulated by the controller that passes the power through the cord to the hand piece and tip.

There has been a lot of misleading information concerning wattage on wood burning units. Many manufacturers make high wattage claims that are false. We have tested many of these units and have found that they all consume less than 45 watts of power, including the units claiming to deliver 130 watts max.

Simply put, wattage is power; and generally speaking, more is better than less. The logical question to ask is how much wattage does one need. To answer this, we conducted an experiment in our shop using a wattmeter, a Detailer with 18 gauge cord, and a "K" tip (small point). Several feather barbs were burned on a piece of basswood with the Detailer's control knob set to 3. We were able to burn a nice, crisp "toast" colored barb. The wattmeter registered 10 watts! Next, we set the Detailer to full power. The "K" tip glowed a bright orange, the basswood burned a burnt black, and the feather barbs looked horrible. The wattmeter registered 27 watts. With respect to wood burning, we feel that wattage rating is severely overrated. You should choose a wood burner that has the features that you require, and a price tag that fits your budget. Colwood's wide selection of control units, and hand

piece cords make it easy for you to accomplish this while satisfying all your artistic needs.

Wood burning Units Details and Traits

Function:

As children, many of us had the opportunity to use the "soldering iron" type of wood burning tool. Mine first came as a Christmas gift from my Grandparents – the kit included six or eight pre-printed plaques, paints, and the burner. Sadly, I never saw it again after I burned (destroyed) all the plaques and decided to launch a career by doing some redesign on the side panel of a hutch.

These were fine for rough detail, but as the need for finer detail arose, new machines were built with sharpened wire tips that could burn much finer lines with far more control than the old-time units.

One of the first units used a light bulb to vary the temperature output. Just screw in a higher wattage bulb for more power!

Next came units controlled by a rheostat. These units used a simple rheostat power controller to vary the voltage to a transformer, and thus vary the heat to the burning pen.

Today, most (if not all) of the newer generation wood burning systems use an electronic circuit to more evenly regulate power output. The circuitry is similar in operation to a lamp dimmer, except that a transformer (primary side) takes the place of the light bulb. The control circuit varies the level of AC voltage to the transformer. The sec-

ondary of the transformer is connected to the output jack of the burner, which is where the burning pen is plugged in. The burner transformer is unique in that most units only generate around 2 volts AC to the burning pen. But even though the voltage is low, the current to the pen can be as high as 20 or more Amperes! This high current is needed to heat the resistance alloy (most use Nickel-Chromium wire) of the burning tip.

Considerations:

Although most of today's wood burners function basically the same, there are many differences between units. Units can vary in price from \$45 to over \$200, depending on features and power output. It is important to choose a burner that fits the way you burn. If you burn hot or put a lot of pressure on the tip, you will need a heavier duty style of burning pen that can handle this kind of use. Conversely, if you are creating a World Class miniature piece, you would want to use finer, more delicate tips that will allow the degree of detail that competition at this level requires – conceivably up to 125 or more lines (strokes) per inch!

There are also burning pens I call "medium duty" that can cover a wide range of uses. These pens have tips that are not TOO big or TOO small, and in the right hands, can accomplish a wide range of burning techniques.

Another consideration is whether to buy a fixed tip (tip permanently soldered into pen) or a replaceable tip (tips unplug from pen) style of burning pen. A replaceable tip pen can be a less expensive initial investment if you want many different tip styles, but can possibly cause problems in the future as the connections get loose or corroded. If you buy a fixed tip style, look for a high quality silver soldered "tip to pen" joint, for the best possible electrical connection. Should this be your choice, you may want to check to insure that the manufacturer offers a tip replacement service so you don't have to replace the whole pen when you wear out a tip.

When you buy a new wood burner, don't waste a

lot of money buying 20 different styles of burning pens! Your salesman should steer you to 2 or 3 pens that fit the style of burning you wish to do. Beware of the salesperson that tells you that you "need" a great many different styles or shapes of pens – you know whose benefit that sales pitch is for! You will soon find that you are using two or three tips constantly, and any others are just special use tips that are used once or twice a year. This illustrious advice coming from one who has to have two or three full sets – of everything! There are many different ways to use a burning tool. I know of one artist who creates beautiful flatwork (pyrography) pieces using only 2 different tip styles. Trees, grass, fur, plants, shading, etc., all done with two tips! She might use one upside down and backwards to achieve a certain effect of technique, so don't be afraid to try something new!

A major consideration to any unit is the cord that runs between the control box and the burning pens. Some units have stiff, clunky wires that can impede a smooth workflow. Other units have very thin, flexible cords. The quality and size of wire used in these connecting cords varies greatly from manufacturer to manufacturer. Before you purchase a unit, try as many as you can so you get a better idea of what will best work for you.

If at all possible, test several different brands to find the unit that "works for you" in all categories – quality, economy, function, and feature.

[Continued next month]