

— MAKE IT YOURSELF —
PYROGRAPHY CLOCK AND COASTERS —



*Skill Development:
Pyrography and Clock Making*

 Lee Valley



MAKE IT YOURSELF

Pyrography Clock and Coasters

#LVMadeByMe #LVLetsDoSomething

Skill Level: For adults, beginner to intermediate. Also appropriate for children 14 years and older when supervised by an adult.

***Tip:** The video and instruction booklet go hand in hand to both tutor and guide you through the steps. We suggest you watch the video first, especially if you are a visual person, and then read through the instructions before you start. At the very least, be sure to read all the product instructions to familiarize yourself with how to use each product. For best results, always follow the product directions and safety notifications.*

Time to Complete: 1 to 2 days. Allow 2 to 8 hours on the first day, and 5 to 8 hours on the second day.

***Tip:** While the estimated time to complete this project is based on our tests, we encourage you to take your time. Don't feel obligated to complete this project in one day. By all means, you can stretch this project over as many days as you would like. Savor the experience. Let the maker in you out to play. Take as much time as you need to experiment with all the nibs. We want you to enjoy learning how to add pyrography details in wood at the same time as you make a clock and coasters.*

Skill Development: Pyrography and Clock Making

You will develop your pyrography skills as you transform a basswood plaque into a unique clock featuring a design of your choice. Begin by exploring the effects of using each of the 11 interchangeable pyrography nibs on the four rounds of aspen, which you can then use as coasters. Once you are comfortable using the tool and the various nibs, you will learn how to transfer your design onto the basswood plaque, trace the major outlines, then add shading and other decorative details using as many nibs as you would like. A coat of Osmo Polyx clear matte hard wax oil will seal your wood burned designs before you install the clock mechanism.

KIT CONTENTS

- Multi-function heat pen
- Live-edge oval basswood plaque, 10" × 13" × 11/16" thick
- 4 aspen wood coasters, 3.5" diameter (sanded)
- Graphite tracing paper, 8.5" × 11"
- Masking tape, 1/2" × 60 yards
- Battery-operated quartz clock movement with a 3/4" long shaft (one AA battery required; not included)
- Pair of 2 5/8" black clock hands
- 5/16" utility brad-tip drill bit
- Osmo Polyx clear matte hard wax oil (125 ml/4.2 oz)
- Cotton rag
- 4 vinyl gloves

Note: The basswood plaque and aspen wood coasters are sanded smooth, ready to use.





Other items you might find helpful to have on hand (not included):

- A design of your choosing
- Pencil or ball-point pen
- Ruler
- Hand drill
- Needlenose pliers
- Electrical tape
- Eraser
- Sandpaper, 80x
- A couple of spacers to elevate the plaque off your worksurface (e.g., slim dowels, chopsticks)
- Mask
- Small Fan
- Desk lamp
- 1 AA battery (for the clock mechanism)
- Fire extinguisher

Tip: Feel free to use any other tools you have on hand that you think might be useful.

DAY 1: COVERS STEPS 1 TO 3 AND SHOULD TAKE APPROXIMATELY 2 TO 8 HOURS TO COMPLETE.

1 SETTING UP YOUR WORKSPACE

- a. Select a clean, open and well-ventilated work area. Your worksurface should be flat and clear of any flammable objects. (Having a fire extinguisher nearby might serve as a good ounce of prevention.)
- b. Remove the contents of the kit from the box and set them aside, but close at hand. Unfold the empty box (or any old box you have around the house) and place it on top of your worksurface to protect it.
- c. If you haven't done so already, read all the product instructions to familiarize yourself with how each product is to be used.
- d. Tape the base of the tool stand to your worksurface to ensure it doesn't slide on the worksurface when you place the heat gun on it.

***Tip:** While it is important to work in a well-ventilated area, away from a smoke detector, we also recommend that you place a small fan near your workspace to redirect the smoke away from you. A desk lamp will also be helpful for illuminating the transfer lines so you can clearly see the areas that you have yet to burn.*



2

GETTING ACQUAINTED WITH THE PYROGRAPHY HEAT PEN AND THE INCLUDED NIBS

The term “Pyrography” means writing with fire. This technique is used to embellish wood and other materials with controlled burn marks to create a design with the use of a heated nib. When this technique is applied to wood, it is also called wood burning.

The heat pen comes with 11 interchangeable solid-nib pyrography nibs that produce a variety of patterns and marks. The 7” handpiece is lightweight, comfortable and easy to control. With the heat-regulator dial built into the 55” power cord, it’s easy to adjust the temperature of the nibs to suit the material you are using. For burning wood, a medium-high temperature setting is sufficient for most nibs. For areas that require a lighter shading, you could use a lower temperature setting to better control the intensity of the mark. It all depends on the effects you are trying to achieve.

***Tip:** If you haven't read the instructions that come with the heat pen, please do so now. It includes valuable information on how to use the tool, including tips and techniques.*

Nibs and Their Best Uses

The interchangeable nibs provided let you achieve a wide range of lines, patterns, tones and shades. Different effects can be obtained by varying the angle or temperature of any of the nibs. Use the included aspen coasters to practice using each nib to determine which ones will be suited for use with your design.



***Caution:** It's always best to install a nib when the pen is cold in order not to damage the tool or burn your fingers. Always unplug the tool before changing nibs. Use needlenose pliers to twist the nib off and twist another nib in its place.*

***Tip:** To prevent damaging the nibs as you replace them, wrap some electrical tape around a pair of needlenose pliers.*



Flow Nib: This might be the nib you reach for most often until you develop your pyrography skills. Think of this tip as your training wheels. It is excellent for beginners since this nib flows in all directions and won't catch the grain the way sharp-edged nibs will. The resultant lines are a bit thicker than the straight-edged nibs. It excels for bold lines, curves, circles and dots. It is not the best choice for block lettering or shading, although it can produce some interesting effects.



Mini Flow-Nib: Used for burning intricate details, including straight lines, curves, circles, dots and fine cursive lettering. It is not the best choice for shading, unless you do so by making a series of small dots or short strokes and play with pressure to achieve different tones.



Universal and Mini Universal Nib: Considered to be the all-purpose nib. It can be used for straight lines, shading and gradient, block lettering. You can create a triangular pattern when it is used on its end. The end of the nib yields short lines, perfect for hatching and cross-hatching techniques. It isn't the best choice for curves, circles and dots.



Calligraphy Nib: Excellent for block lettering, as well as for making straight lines and shading. The end of the nib yields short lines, perfect for hatching and cross-hatching techniques. Depending on how the nib is tilted, it yields a triangular pattern or a scale-like pattern. It isn't the best choice for curves, circles and dots.



Shading/Leaf Stamp Nib: The flat bottom is great for shading and gradient, as well as for creating leaf patterns. The edge is good for straight lines and the sharp end is good for fine dots, curved lines and cursive lettering. By adjusting the pressure you place on the flat bottom, say lean more to the left, you could achieve partial leaf prints with a built-in gradient.



Cone Nib: Select this nib for details, straight lines, curves, circles and dots and cursive lettering. It is inadequate for shading, unless you do so by making a series of small dots or short strokes and play with pressure to achieve different tones.



Tapered Nib: Select this nib for fine details, straight lines, curves, circles and dots, fine cursive lettering. It is most suitable for hatching and cross-hatching techniques. It is inadequate for shading, unless you do so by making a series of small dots or short strokes and play with pressure to achieve different tones.



Stamp Nib: Good for decorative details and borders. When used straight down, the nib creates a six-sided star pattern. Use it alone or in combination to achieve different results. When the nib is used on its side, the effect is like dentil edging. When the nib is used tilted, it creates a v shape.

3 PRACTICING USING THE NIBS

It is with practice that you will develop your pyrography skills. It's important to understand how each nib interacts with heat, pressure and flow. Holding the heat pen doesn't come naturally for everyone. Using the aspen coasters as practice boards will help you see for yourself which nib is best for straight lines, fine lines, shading, curves, dots and lettering.

Don't rush the practice session. Take your time. New nibs also need a "breaking in" period. A used nib will not only take less time to heat up, but it will also flow with more ease than a new one.

***Tip:** If you are having trouble achieving gradients, try hatching and cross-hatching strokes instead, using any of the straight-edged nibs (e.g., flow, universal, calligraphy, cone or tapered nib). This technique can mimic shading and texturing effects when it's tricky to achieve gradients on some pieces of wood. Start by making hatching strokes in one direction. For cross-hatching, follow with hatching strokes over the first set of lines at 90°. The darkness of the line will depend on how long the nib stays in contact with the wood.*



END OF DAY 1

DAY 2: COVERS STEPS 4 TO 9 AND SHOULD TAKE APPROXIMATELY 5 TO 8 HOURS TO COMPLETE.

4 CHOOSING YOUR DESIGN

- a. Select the design that you would like to wood burn on the plaque. In choosing your design, take into consideration the location of where the clock hands will be installed. Envision where the clock hands will be on the plaque. Don't limit your design to a clock face with numerals. Make the design personal. Incorporate something that relates to your hobbies and interests. If you like fishing, select a fishing theme. If reading books is more your passion, select a reading theme. The important thing is to choose a design that inspires you. Have fun with it. You can take a photocopy of the image or print it on paper.

Tip: If this is your first time using a pyrography tool, avoid designs that have fine or intricate patterns. For your first project, keep the design simple with uncomplicated lines. Turn to coloring books for inspiration. Simple outlines are easier to follow while you familiarize yourself with what each nib can and cannot do.



Beginner



Advanced



Tip: If you want to incorporate any numerals on your clock face, you can type these out, print them to the size you need, then cut and tape to your design. Alternatively, you can search online for oval clock templates.

5 DRILLING THE HOLE FOR THE CLOCK MECHANISM

Tip: We recommend you drill the hole for the clock mechanism before wood burning your design as a reminder of the clock's location relative to your design.



Caution: Always wear proper eye protection when drilling.

- a. Find the center of the basswood plaque, and mark the resultant intersecting lines on the front of the plaque.

Tip: To ensure you drill a clean through hole (with no tear-out), apply a piece of painter's or masking tape on the front of the plaque where the hole will be drilled. Mark the center of the plaque directly on the tape. Since you will be drilling all the way through the plaque, position it such that the section to be drilled overhangs your worksurface. This will ensure that you do not inadvertently drill into your worksurface. Also, to prevent breakout on the exit side of the hole, apply another piece of tape on the back of the plaque. The tape will stabilize the wood grain beneath it. Pull the tape off once the hole has been drilled. Alternatively, use a piece of scrap wood under the plaque to provide support as the drill bit is pushing through.

- b. Install the 5/16" brad-tip drill bit in a hand drill. Make sure to fully tighten the bit in the drill chuck and that it is straight; otherwise, the bit may break as you drill.
- c. Drill the hole for the clock mechanism from the front of the plaque all the way through to the other side.

6 TRANSFERRING YOUR DESIGN ONTO THE BASSWOOD PLAQUE

Tip: Graphite paper is not the same as carbon paper. Graphite paper leaves a dark, clean, smudge-proof line on wood. The sheet has no wax or grease and can be reused several times. Any remaining lines are easy to erase with sandpaper or a sanding eraser.

- a. Tape one corner of your printed design exactly where you want the design to appear. Slip the sheet of graphite tracing paper, shiny side up (dark side down), between the wood and your design. Hold the paper as flat as you can and start tracing the major outlines with a ball-point pen. Apply enough pressure to ensure that you are transferring your design onto the plaque.



- b. If you lose track of what you have traced, you can lift the design and tracing paper up to take a look.
- c. When you are satisfied that you have traced all the major outlines of your design, remove the tracing paper, your printed design and the tape. Keep your original design nearby so that you can reference it as needed, especially in those areas that might not have transferred properly or where the transfer lines are not entirely visible or clear.
- d. If required, use a pencil to free hand any broken lines directly onto the wood.

7 DRAWING WITH THE HEAT PEN



Caution: Be aware that this pyrography tool will generate heat and smoke from the burning wood. It is recommended that you wear a mask while using the heat pen. Be mindful of how you hold the tool and where you set it down. Always follow the safety guidelines provided in the instructions that are included with the tool. The instructions include a recommended temperature chart for specific material. For pyrography on wood, any setting above the lowest temperature is suitable; however, to start, select a lower temperature to avoid over-burn and dial it up if you find that the lines and markings are too light. Do not leave the tool unattended. Always remove the nib and unplug the heat pen after use.

- a. Install the nib of your choice, plug the unit in, and place the heat pen on the tool stand.
- b. Select the desired temperature and let it warm up for 10 to 15 minutes.
- c. Make test burns on the back of the basswood plaque, or one of the practice aspen coasters. Not only will this help to determine if the nib is hot enough, it will also give you an idea for how fast you should move the tool in order to trace your design. Keep your pen moving at all times to prevent blobs and over-burns. Maintain a slow and steady flow; jerky movements and pauses will affect the quality of your lines. It takes a bit of time to get used to holding the tool and using it to draw, since you are holding it much higher than you would, say a pen or a pencil.

Tip: If you find that the nib gets stuck in the wood, lightly scrape the nib on a piece of sandpaper or a sanding block to round the nib just enough so it doesn't catch in the wood. When you notice that your lines are not as smooth as you would like, you can scrape the nib on sandpaper to remove any built-up dirt and carbon deposits.



- d. Begin by tracing the major outlines of your design. Apply moderate pressure, and pull the nib towards you rather than push it away. You want to be able to see where you have burned.



Tip: Keep in mind that when you lift your tool and put it back down on your workpiece, the nib will have heated up. When you place your nib back down on the wood, do so gently and lightly to prevent an over-burn. Move the tool before the nib touches the plaque to prevent over-burn in the area where the nib first made contact with the wood. Don't worry about tiny imperfections – some of these can be sanded or scraped off, but these will also add some character to your design.

- e. Turn your wood to access the lines that need to be burned, so that you can keep pulling the nib towards you. Take your time.

Tip: To obtain long straight lines, use a ruler as a guide. Place the nib against the ruler and pull the nib slowly toward you. You can even go over a line to darken it, if needed.



- f. Once the major outlines are complete, add shading details. Start with a light touch, then go over the shading to obtain the desired shading. If you need to go over a line to get more detail, use a brushing stroke to pick up the line where you left off.

Tip: Use your pinky finger as your rest to control the tool. For reaching awkward spots, use your other hand to support your drawing hand.



- g. When you are satisfied with the results, place the heat pen in its tool stand, turn it off and unplug it. Let it cool down completely before storing it.
- h. Erase any remaining marks with sandpaper or an eraser.

8 APPLYING THE FINISH

The Osmo Polyx oil wax has a low environmental impact. It is a blend of vegetable oils (sunflower, soybean and thistle) and waxes (carnauba and candelilla) combined with a small amount of low-odor solvent to improve workability. The clear finish provides protection comparable to varnish but is much more forgiving to apply – you can use a variety of methods (brush, roller, buffing pad or cloth), and a dust-free environment is not required. You don't need to sand between coats, which also makes future repairs straightforward.

This finish is hard-wearing and has excellent resistance to water, alcohol and mild acids, making it suitable for a range of applications, from flooring and furniture to high-moisture environments such as kitchens or bathrooms. Non-toxic once cured, the finish is safe for food contact and complies with European standards for child safety (EN 71.3).

Note: *For many woodworkers, the application of the finish is the most satisfying step. The finish brings out the natural beauty of the wood and often reveals some characteristics that were previously hidden. Take a moment to let that sink in – both literally and figuratively. There’s something quite delightful about watching the wood grain come alive right before your eyes.*

- a. Stir the oil wax thoroughly before use.
- b. Elevate the plaque with a couple of spacers. You can use whatever you have on hand, e.g., slim dowels or chopsticks.

Tip: *Cut the cotton rag into three or four pieces.*

- c. Wipe your plaque with a dry piece of the cotton rag to make sure there aren’t any loose particles.
- d. Even though this product is made with natural ingredients, please do wear gloves when you apply the oil wax. Dip a piece of the cotton rag into the oil wax and rub it all over the plaque in a circular pattern to spread it thinly. Apply sparingly; a little goes a long way. Let the finish penetrate the wood for about 15 minutes.
- e. Wipe off any excess with another clean piece of the cotton rag.
- f. Place the plaque on the spacers and allow the oil wax to dry for 8 hours or so.
- g. If desired, apply a second coat of the oil wax, following the previous steps.



Caution: *Make sure to properly discard the rags as indicated in the product instructions to prevent spontaneous combustion.*

9 INSTALLING THE CLOCK MECHANISM

- a. Place the hanger and the rubber washer on the shaft of the mechanism.
- b. Insert the shaft into back of the plaque and into the drilled hole, and align the mechanism in the desired orientation. Secure the mechanism to the plaque with the two screws provided.
- c. Turn the plaque over. On the exposed end of the shaft, install (in this order) the lock nut, the hour hand, minute hand and the end cap.



- d. Adjust the clock to the correct time by using the adjustment wheel on the back of the mechanism. Do not adjust the time with the clock hands, as this may damage the mechanism.
- e. Find the perfect spot for your clock. Hang it in a prominent location so it is sure to make an impression. This is, after all, your masterpiece.

NOW WHAT?

The tools and supplies in this kit are reusable. We hope that you will be inspired to make more projects where you can continue to hone your pyrography skills.

Besides using another piece of basswood for your next pyrography project, you can also use any light-colored wood with unobtrusive grain to ensure the pyrography details come through. Good choices include aspen, ash, beech, birch, poplar, maple, willow and white oak. Avoid dark woods such as walnut or purpleheart, as well as resinous (sappy) wood such as pine or cypress. Depending on where you source your wood, you may need to lightly sand the surface smooth with 80x sandpaper to remove any mill marks.



Caution: *Never use pressure-treated wood or any type of treated wood for your pyrography projects. The toxins released while burning these woods are inherently dangerous for you to inhale.*

Pyrography details can be added to a range of projects, from coasters, wooden utensils and cutting boards to wooden picture frames, wall plaques and canoe paddles.

As you experiment with pyrography, you can further personalize your projects by adding color accents with paint or coloring pencils.



Besides using it on wood, the heat pen can also be used on leather, cork, gourds and ceramic. Feel free to use it to embellish any of your other projects. Why not sign your name and date the back of your previously completed projects to let others know that you made those?

The heat pen is handy for many other practical and creative applications. It comes with a coil of solder, a regular soldering nib and a hot-knife nib for creating crisply detailed stencils and other cut-out designs.

You can reassemble the box and store the tools and supplies in it so you know where to find them when the need for them arises. The more you make, the more the tools will be of continued service.





CREATED BY LEE VALLEY. MADE BY ME.

Now that you have completed your project, we would love to hear about your experience and see the finished project.

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