

Dremel for the Miniaturist 101

General Tips

- Always, always, always wear eye protection and a dust mask. Things fly in the air.
- Don't force it – let the bits do the work for you.
- You can get different results from different bits when you move your Dremel in either direction.
- When holding a Dremel, be sure to not put your hands over the air vents.
- If the Dremel gets hot, turn it off and let it cool.

Materials

Wood:

- Grain affects working with wood. Work with the grain when possible or the tip of your Dremel will skip.
- The harder the wood, the more detail you can get.
- Use wide strokes to get an even, smooth finish.
- Use a saw attachment for any substantial removal of material.
- With high speed cutters, use bits with smaller heads for thinner lines and/or smaller spaces.
- Using the Dremel at higher speeds will cut more smoothly.
- You will get more drawing control if you work at a shallow depth.
- Use a ball tip to carve out a space for inserting beads.
- The edge of sandpaper bands can be used to carve out fine lines.

Glass:

- Smooth out the edges of your glass first to remove sharp edges.
- Work on glass on a dark surface so you can see your work better.
- Use a low speed with diamond bits or your glass will chip.
- Move the Dremel in the direction of the rotation to reduce chipping.
- To see exactly what your image will look like through the glass, you need to get on top of it and look down. Looking at glass from an angle will cause distortion in viewing the image.
- Keep the Dremel moving on the glass and don't keep the tip in one spot or that spot will overheat – give it time to cool off.
- You can work on both sides of glass to create dimension.

- The thicker the piece of glass, the greater the depth achieved.
- Images on the back of glass need to be done in reverse.
- If the tip of your bit is skipping on the glass, then your speed is too slow.

Mirror:

- All tips for glass can be applied for use with mirror.
- The rubber grey disk (looks like stone) takes away the paint and silver from mirror but doesn't grind the glass

Linoleum:

- You can cut levels into linoleum because it's the same material all the way through.
- Don't stay in one spot for too long – linoleum will melt and clog up your bits – work for short periods of time.
- You can cut all the way through linoleum with a Dremel.
- You can use the Dremel to carve linoleum for printmaking.

Plexiglass:

- You can use brushes to create a soft frosted finish.
- Use the bits lightly – only use the tips. Don't push down.
- Plexiglass has a low melting point, so work on an area for a short period of time and then let it cool.
- Pieces of plexiglass that fly off while you're working can burn your skin – wear protective clothing.
- You can work through plexiglass if it's thin enough.
- You can work on both sides of plexiglass for depth.
- Be careful while working, the surface of plexiglass can scratch easily.
- Use low speeds when working with sanders.

Ceramic Tile:

- Ceramic tile is composed of a glass surface on a clay base. You can take off the glassy surface or work through to the ceramic base, which is softer.
- Tiles that are made for floors have been fired at a higher temperature and are harder to work with.
- Tiles made for walls and countertops are softer and easier to work with.
- Seal any exposed ceramic areas or it could stain.

Aluminum:

- Because aluminum is a soft metal, you can cut all the way through it.
- You can work the surface to create reflective values.
- Metal brushes can be used to clean up burrs.
- Use a metal circular saw bit for cutting out slots.
- Alcohol inks can be used on the surface of aluminum.
- Sand down sharp edges.
- Before polishing, make sure all burrs have been removed.
- Polish aluminum by moving in one direction.
- If you want to keep the surface shiny, you'll have to seal it or it will oxidize over time.
- Be aware that aluminum will heat up the longer you work with it.

Polymer Clay:

- Don't stay in one spot for too long – polymer clay will melt and clog up your bits. Work for short periods of time.
- Don't use diamond bits.
- You can polish polymer clay to a small degree.
- You can cut recessed areas in polymer clay, then fill the recesses with a new color of clay and re-bake it to create inlays.
- Carving polymer clay is messy! Keep this in mind when choosing your workspace.

Primary uses for a Dremel Moto-Tool

The main categories of bits, according to Dremel, include the following:

1. Carving & Engraving
2. Sanding
3. Cutting
4. Grinding & Sharpening
5. Cleaning & Polishing

These categories are pretty consistent among other manufacturers of rotary tool accessories, so you can often find alternatives if you shop around.

Carving & Engraving

There are two different types of bits that fall into the carving & engraving category – diamond bits and high speed cutters.

Diamond bits can be used with the following materials:

- Aluminum
- Bookboard
- Ceramic tile
- Glass
- Mirror
- Steel



High speed cutters can be used with the following materials:

- Bookboard
- Linoleum
- Polymer clay
- Wood



The type of carving you undertake determines the type of bit, burr or drum you will need. Start with larger cutting tools or wheels for bold, relief carving. Caricature or animal carvings require a more delicate approach with thinner, carbide-tipped cutters. Engraving or marquetry involves the use of fine-tipped engraving cutters. The common types of carving or engraving bits are:

- **Wheels**: Carving means starting rough and ending fine. Wheels are a type of cutting tool. With a thin abrasive disc, they cut through thinner pieces of wood like a circular saw blade.
- **Burrs**: Burrs are rough, round cylinders with different shapes. Some are blunt and extremely abrasive, others fine and pointed. With more variety than most other tips, burrs are multipurpose bits for wood removal and shaping.
- **Engraving Cutters**: When you've removed enough wood with a burr or cutter, the engraving bit can be used to add detail. Engraving cutters are small and thin. With the precision and accuracy of a sharp pencil, they cut or engrave the smallest features.

When carving or engraving, follow these steps:

1. **Step 1 Sketch or Template**: Draw a sketch directly onto the surface of the wood -- or draw the sketch on paper. If you use paper, either glue the paper to the wood (use scissors to cut it if needed) and trace around it, transferring the sketch to the wood, or use carbon paper to transfer the design (preferred) .
2. **Step 2 Remove Excess Material**: Use a band saw, hand saw, drill, jig saw, chisel or knife to remove as much of the wood from the drawing as possible, without disturbing the sketch or template.
3. **Step 3 Insert a Burr or Cutter**: Insert a stump burr or high-speed cutter bit to remove wood fast for relief carving. The size of the cutter should be in relation to the amount of wood being removed. Big bits remove wood faster.
4. **Step 4 Insert a Detail Bit**: Insert an engraving cutter or carbide-tipped cutter for engraving or to add details. Use a diamond-wheel point for the finest details. As with burrs, the size or shape of the engraving bit correlates with the amount, depth or size of the desired effect.
5. **Step 5 Hold it Like a Pencil**: Hold the Dremel tool like a pencil. Turn it on and ease the tip into the wood, at a comfortable angle. When the tip engages the wood, drag it along the lines or open spaces to remove wood or cut lines. Work with short strokes, cleaning off excess sawdust to check your progress.
6. **Step 6 Cutting and Removing**: When the template or drawing is definitive, remove the template if desired. Continue defining the carving or engraving until satisfied. Change bits as needed to get into tight spaces or add details.
7. **Step 7 Switch to a Drum**: Change to a sanding drum if desired. Use the drum to round edges, blunt corners or smooth rough surfaces.

When you are dealing with hard-to-reach spots, the flex shaft attachment for the Dremel allows for carving in tight spaces. It's thinner and lighter, like a pencil with a cord, and provides the operator a more relaxed posture when carving.

Sanding

Sanding involves two different parts – the drum and the sanding band. Sanding bands come in different grits, just like sheets of sandpaper.

To use the sanding band, you simply slide it over the drum. Replace it when it wears out. Easy peasy.

Sanding bits can be used with the following materials:

- Aluminum
- Bookboard
- Plexiglass
- Polymer clay
- Wood



Cutting

There are different types of cutting wheels for different materials.

Abrasive cutting wheels can be used with the following materials:

- Bookboard
- Plexiglass
- Wood



Fiberglass cutting wheels can be used with the following materials:

- Aluminum
- Bookboard
- Ceramic tile
- Wood



To use a cutting wheel, you have to attach it a mandrel.

Unscrew the tiny screw on top of the mandrel and remove one of the washers.

Slide the wheel onto the screw, then add the second washer. Attach the screw to the mandrel base and tighten.

Replace the wheel it when it wears out.



Grinding & Sharpening

Grinding and sharpening stones are made of two basic materials: silicon carbide (green bits) and aluminum oxide (brown, orange, pink, or grey bits). The stones wear out with use. You can reshape your grinding stones using a dressing stone.

Orange stones can be used with the following materials:

- metals, castings, welded joints, rivets and rust
- Steel and steel alloys



Blue/green and pink stones can be used with the following materials:

- Cast iron, non-ferrous metals and non-metallic materials
- Aluminum
- Ceramic tile
- Glass
- Mirror



Cleaning & Polishing

Felt polishing wheels and cones are used in combination with polishing compound.



To use a polishing felt, you have to attach it a mandrel (different from the cutting wheel mandrel). The felt has a tiny hole in the center of it – you screw the mandrel into the hole to attach it.

Felt polishing wheels and cones can be used with the following materials:

- Aluminum
- Ceramic tile
- Glass
- Mirror

