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Spray Gun Savvy
Ways to maintain peak performance

PLUS
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The ABCs of Spray Gun Maintenance

By Paul Masters

Last August, Paul Masters spent four days in Atlanta at the International Woodworking Fair (IWF) demonstrating how to maintain spray guns. Hundreds of finishers and refinishers visited his booth to watch him go through the steps shown in this article for keeping a spray gun operating at peak efficiency.
I've been cleaning and rebuilding spray guns since 1975, so it doesn't come as a complete surprise to hear furniture and cabinet finishers and refinishers tell me exactly what I've heard for years from automobile refinishers: "When my spray gun stops working properly, I toss it under my bench and buy a new one."

Although spray-gun manufacturers might see this as music to their ears, I see it as a senseless waste of money. With the simple preventive maintenance program I demonstrate here, you can keep your spray gun operating like new for many years. And even when the parts do finally begin wearing, you can have the gun rebuilt for far less than it would cost to replace it.

There are four levels of spray gun maintenance: daily lubrication, periodic maintenance (best if performed at the end of each work week), thorough cleaning (if the periodic maintenance doesn't solve the problem) and rebuilding the spray gun (that is, replacing all the gaskets, seals and packings).

To rebuild the gun, it's usually best to send it to a specialist who you can find by calling the manufacturer. But you can do the daily lubrication, periodic maintenance and cleaning yourself with a package such as the one I use -- the Master Cleaning Kit offered by Spray Gun Solutions of Arvada, Colo.

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**Daily Lubrication**

Figures 1-3: Lubricate the trigger pin (1), air valve (2) and needle packing (3) daily using a gun lube with no silicone oil or petroleum distillate. You can get this type of gun lube from most spray-gun suppliers or from Spray Gun Solutions.
Figure 4: Begin by cleaning the face of the air cap with the General Purpose Brush. Continue cleaning the air-cap threads, the external threads on the front of the spray gun and the gun body. You can use lacquer thinner if the build-up you’re removing is lacquer, but for all other finishes and paints I recommend Kleen Strip SG-14, which contains methylene chloride and is much more effective. (It’s also faster on lacquer, especially if the lacquer has caked hard.) You can buy this solvent from your spray-gun supplier or from an auto-body supply store.

(for safety, I recommend wearing solvent-resistant gloves and safety glasses when working with solvents. The photos for this article were taken without gloves for illustration purposes only.)

Figure 5: Clean the center hole and the holes in the air horns of the air cap with one of the narrow brushes from the five-piece mini-brush set. Clean from the outside in and from the inside out. Also, use the 1/4-inch, 100% natural horse-hair end brush to clean the inside of the air cap. Be careful not to scratch the air cap!

Figure 6: Clean the center hole and all of the air holes in the fluid nozzle with the five-piece mini-brush set. Clean the air holes both front and back.

Figure 7: Clean the inside of the fluid nozzle with the 3/16-inch natural horse-hair end brush so as not to scratch the needle seat.

Figure 8: Locate the correct-size needle in the seven-piece needle set, insert it into the pin-vise handle and use it to clear all of the air holes in the air cap. The needles are surgical stainless steel and will not damage the holes.

Figure 9: Clean the fluid passage of the gun head with the 1/4-inch end brush.

Figure 10: Working in from the front of the gun, clean the fan-adjustment seat with the 1/4-inch body-cavity brush.

Procedure continued on page 28
## Common Spray-Gun Problems

I've fielded thousands of calls concerning problems with spray guns. Here are the five most common problems, together with explanations, causes and solutions. The causes and solutions for each problem are arranged in rough order of their frequency. – P.M.

<table>
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<th>PROBLEM</th>
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| Fluid is leaking or dripping from the fluid tip at the front of the spray gun. | The fluid needle isn’t seating well in the tip of the fluid nozzle. | 1. The nut that holds the packing in place (located right in front of the trigger) is too tight and presses the packing against the needle, preventing it from closing fully.  
2. The packing has dried and hardened to the point that it doesn’t allow the needle to close tightly.  
3. There’s dirt, paint or finish in the tip of the fluid nozzle that is preventing the needle from closing fully.  
4. The fluid tip or needle is worn or damaged, allowing liquid to seep through.  
5. The spring that pushes the fluid needle closed (when the trigger is released) is broken.  
6. The fluid needle is too small or too large for the fluid nozzle, causing them not to seat well. | 1. Loosen the nut a little.  
2. Lubricate the packing with a non-silicone oil.  
3. Clean the fluid tip.  
4. Replace the worn or damaged parts.  
5. Replace the spring.  
6. Change the parts so they do seat well. |

| Fluid is leaking from the packing nut in front of the trigger. | The packing isn’t sealing well around the needle. | 1. The packing nut isn’t screwed on tightly enough to press the packing against the needle.  
2. The packing is worn or dry. | 1. Tighten the packing nut.  
2. Try lubricating the packing with a non-silicone oil; if this doesn’t stop the leaking, replace the packing. |

| The spray is pulsating or fluttering. | Air is getting into the fluid passageway and mixing with the material as it is sprayed. | 1. The cup is being tipped too far.  
2. The material level in the cup or tank is too low.  
3. The fluid-needle packing is too loose or too dry.  
4. There’s an obstruction in the fluid passageway.  
5. The fluid nozzle is loose or damaged. | 1. Hold the cup more upright or add more material.  
2. Add more material.  
3. Tighten the packing nut or lubricate the packing with a non-silicone oil.  
4. Try back-flushing with solvent or do a thorough cleaning. To back-flush, press your finger over the center hole of the air cap and trigger a short burst.  
5. Tighten or replace the fluid nozzle. |

| The paint or finish bubbles in the cup. | Air is backing up into the cup and causing the bubbling. | 1. The fluid nozzle is too loose.  
2. The fluid nozzle seat is cracked. | 1. Tighten the fluid nozzle.  
2. Replace the gun. |

| The spray pattern is too heavy, bottom heavy, right heavy or left heavy. | The air or the fluid material is being discharged unevenly from the spray gun. | 1. There’s an obstruction in the air cap or the fluid nozzle. To determine which, rotate the air cap one-half turn. If the disrupted pattern stays the same, the problem is in the fluid nozzle. If the pattern reverses, the problem is in the air cap.  
2. The tip of the fluid nozzle is damaged. | 1. Clean whichever part is causing the problem.  
2. Replace the fluid nozzle. |
Figure 11: Disassemble the spray gun and remove all O-rings and packings using the specially designed pick. Then soak the entire gun and all the parts overnight in Kleen Strip 56-14 and rinse thoroughly with water. (Never soak the gun or parts without first removing the packings.)

Figure 12: Clean the air-inlet chamber with the 1/2-inch-diameter brush and lacquer thinner.

Figure 13: Clean the material-control and fan-adjustment chambers using the 1/2-inch-diameter brush and lacquer thinner.
Figure 14: Clean the fluid-inlet chamber using the 3/8-inch-diameter brush and lacquer thinner.

Figure 15: Clean any stubborn build-up from the fluid-inlet chamber using the brass power brush. For greater effectiveness, you can cut off the loop on the handle and insert the handle into a drill.

Figure 16: Here is the gun completely cleaned and ready for reassembly (alongside the cleaning kit). Be sure to lubricate the needle packing and adjust the needle packing nut just in front of the trigger to a snug tightness after you've put the gun back together.

Paul Masters owns Spray Gun Repair, a sales, service and warranty company for the ten major spray-gun manufacturers based in Thompson, Conn. He can be reached through his web site—www.spraygunrepair.com—and is willing to help troubleshoot spray-gun problems.

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