



REAL WORLD VINYL

By Rob Ivers

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Using Squeegees With Purpose

It *does* matter how you squeegee.

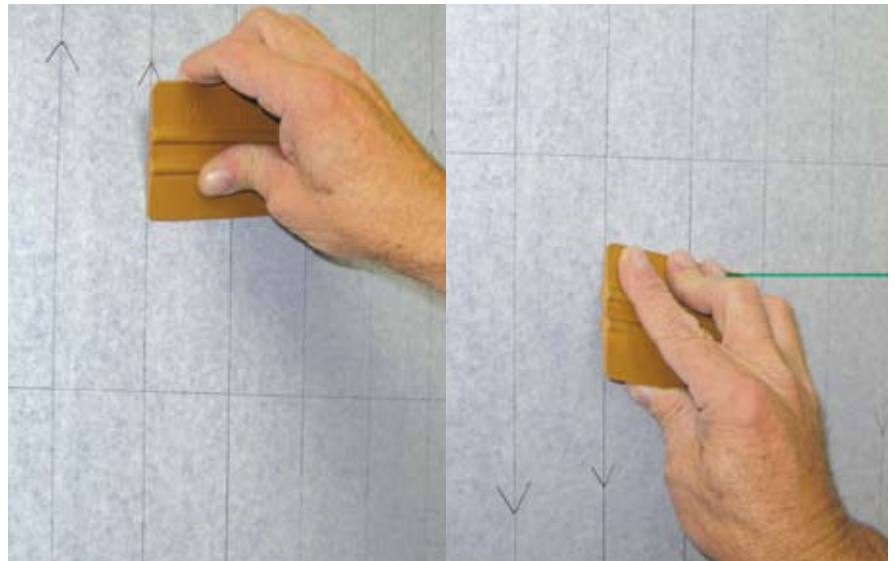
At a tradeshow workshop on vinyl installation, the instructor stated, "It doesn't matter how you squeegee." He provided no further explanation. More recently, a past student of mine commented that, of all the graphic-installation training courses he'd attended, I was the only instructor who taught people how to squeegee.

I'm still in shock over both comments. How can it not be one of the most important skills for a vinyl-graphics installer?

Let's compare it to something we're all familiar with: golf. I'm not a golfer, but casual observation indicates mastering the game is quite difficult. For a minute, ignore all the variables that make golf complex. When a player tees off, he has a club and the ball. Poor swings create slices and hooks, which lead to woods, lakes and sand traps. Don't expect me to believe it doesn't matter how golfers hit the ball.



The righthand side of this vinyl sample was squeegeed properly, but on the left side, poor technique created "zippers," which this nasty combination of bubbles and wrinkles resembles.



(Left) Here's a proper squeegee up-stroke. The squeegee should stay low and flat while angling it nearly horizontal to push air up and right to left. **(Right)** The proper downstroke also remains slightly off-horizontal and moves right to left.

The same concept applies to vinyl installation. Poor technique creates bubbles, wrinkles and "zippers." And, essentially, it's you, your squeegee and the vinyl. How you guide your squeegee matters. You need to work with purpose. What should that purpose be? Most people would say to make the vinyl stick. Obviously, that's the intended result.

Others might answer: "To apply smooth, wrinkle-free, bubble-free vinyl." Again, true. My answer: "To push out all of the air." Regardless of the situation or 100 possible variables, make it your top priority to expel all of the air.

Avoiding common errors

Proper squeegee technique helps you avoid common application errors – bubbles, wrinkles and zippers. Understanding root causes is critical to developing methods that prevent mistakes.

Bubbles are trapped air. The primary causes of bubbles are nicks in squeegee edges, pre-tack (vinyl adhesion caused by simple

contact before it's been squeegeed or even touched, which prevents all of the air from escaping), incorrect squeegee pressure, and improper squeegee technique (which pushes air towards previously squeegeed areas).

Wrinkles result when vinyl adheres to itself. They may occur when the vinyl has slack, or when pressing your squeegee too hard. Zippers comprise a series of parallel lines (wrinkles and/or "long" bubbles), appropriately named due to their resemblance to one side of a zipper. The most common reason for zippers is pushing air (and, sometimes, excess vinyl) against adhered areas.

From this, I learned squeegees must have smooth edges free of nicks and imperfections. Pay careful attention to the amount of pressure applied. Use too little, and the vinyl won't adhere well. Too much pressure stretches the vinyl, which creates excess that leads to wrinkles or zippers. When vinyl tends to pre-tack, don't let the graphic contact the surface prior to squeegeeing.

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Pre-tack occurs because the film has an adhesive with high initial tack, or because the surface temperature is hot. Proper technique pushes out all of the air. It never directs air towards areas previously adhered.

More squeegee fundamentals

Other key squeegee fundamentals include how to angle and grip the squeegee with respect to both the application surface and the squeegee's direction. I've found that vinyl applies more smoothly and easily if you keep the squeegee flatter. If you lay the squeegee down on the surface, lift one edge just enough to raise and barely clear the raised ribs. The only thing touching should be the opposite edge.

This provides the optimum angle for most applications because it allows the squeegee to glide

Best Practices Summary

- For all flat surfaces; pull, don't push, the squeegee.
- Squeegee in straight lines.
- Overlap your strokes by about half the squeegee's width.
- Work from the middle out, not edge to edge.
- Maintain consistent pressure across the entire graphic. Don't let up or pull away until after you pass the edge.
- Direct the air to the open areas, and focus on pushing out all of the air.

smoothly. If you want the vinyl to lie flat, keep the squeegee flat. The higher you raise the squeegee, the greater the angle. Standing the squeegee straight up creates a 90° angle. Like using a lever, a larger angle increases the pressure being applied to the vinyl with no extra force from you.

If you need more pressure due to cooler temperatures or thicker media, raising the squeegee will help. However, if you raise it too much, the increased friction will cause the squeegee to drag or scrape across the surface, which creates most of the problems we try to avoid. It's much easier to apply vinyl when the squeegee

glides smoothly.

Once you have properly positioned the squeegee in relation to the surface, it's important to control the angle. This angle directs where the air goes. To push the air out, direct it to open areas. Imagine you're squeegeeing a graphic up and down from the middle. You started at the right side of the graphic and are moving to the left. On a flat surface, your strokes should create straight, vertical lines.

If you keep the squeegee edge perfectly horizontal, all of the air will flow straight up and down towards open areas. But, if you unintentionally tilt the squeegee slightly askew, the air will be forced against the already applied vinyl.

This is one of the two best ways to create amazing zippers and their combination of bubbles and wrinkles that you may spend an afternoon attempting to repair. Or, you could intentionally tilt your squeegee slightly in the proper direction. This directs the air up and to the left on the upstroke, and down and to the left on the downstroke. Make this adjustment by turning your wrist slightly. It shouldn't change the straight, vertical arm motion.

The second way to create zippers is to not squeegee in straight lines. Hook the squeegee toward the unsqueegeed vinyl at the outside edges. This forms a perfect barrier that won't allow any air to escape. When your stroke pushes air into the barrier on your next stroke -- voila! -- you've created a zipper. Obviously, it's preferable to squeegee in straight lines.

In good hands

Pushing and pulling are the two main ways to squeegee. When pushing, you lead with the squeegee; when pulling, lead with your hand. Generally, I pull the squeegee on all flat, easy surfaces. I only push the vinyl if I'm applying it on indentations or complex curves.

For more information about vinyl application on simple and complex curves, reference my two-part column from last year, "The Master's Corner" (see ST, *September 2009*, page 24, and *October 2009*, page 24).

When pulling the squeegee, I always use the same grip. My grip is a bit unusual, but quite effective. It was borne out of my desire to keep the squeegee as flat as possible. If I grip the squeegee the way most people do, my fingers would be applying the vinyl, not the squeegee.

I can't have that, so I use a floating grip. My palm always faces the vinyl. To squeegee up, I rest my fingers along the top edge. My thumb, which is positioned in the middle of the squeegee on the lower edge, applies all the pressure.

After I complete the upstroke, I pull my wrist back and push the bottom of the squeegee towards the top. As I'm doing this, my thumb slides down to the other edge, and my fingers extend up, until they are spaced evenly across what's now the top edge. With the squeegee positioned properly in my new grip for the downstroke, I move it back to the middle of the graphic to begin.

These are the basics, the foundation of all my squeegee techniques. I hope this article helps you say goodbye to bubbles, wrinkles and the dreaded zippers! ■