

Flat Glass Installation

Tools and Equipment: Installation tools can typically be purchased through your distributor

Authorized 3M Window Film Dealer

- Film handler
- Replacement blades for film handler
- Three-gallon (11 liter) plastic PRESSURE spray tank - 8' - 10' (2-3m) plastic hose
- 12" (30.5cm) Window cleaning squeegee with replacement rubbers
 - 1. 5" (13 cm) Blue Max Film application squeegee (for films less than 6 mils / 0.15 mm thick)
- Thor's Hammer security film application squeegee (for films more than 6 mils / 0.15 mm thick)
- 4" (10 cm) Window scraper with replacement blades
- Five-way tool
- Olfa knives with stainless steel replacement break-away blades
- Mild Baby Shampoo
- Blade Eater

Miscellaneous Hardware & Equipment

Available locally

- 15' (5 m) or 25' (8 m) Tape Measure
- Drop cloths (absorbent)
- Lint-free towels
- White 3M ScotchBrite™ scrubber
- Vacuum cleaner (aqua-vac)
- Small paint brushes (for edge sealer)
- 3M™ Brand masking tape
- Edge Sealer - 3M™ Clear Auto Sealer - Part #08551 - for exterior and interior
- Step ladders and extension ladders
- Scaffolding or access equipment as required

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Tool and Equipment Inspection

Inspect Before Leaving for Application Site

1. Film Dispenser
 - a. New sharp blades
 - b. Alignment of horizontal cutter
 - c. Spare blades
 - d. Clamp bar - surface clean and positive grip
2. Plastic Pressure Spray Tank
 - a. No Leaks
 - b. Flush out before filling
3. Squeegees
 - a. Clean, Straight, Flat and Sharp
 - b. Blade edge - replace if worn or nicked
4. Application Squeegee Repair
 - a. Rub across edge with 400 or 600 grit 3M **Wetordry™** brand sandpaper
 - b. Maintain good square edge
 - c. If nicks and chips are still present, use 200 or 300 grit 3M **Wetordry™** brand sandpaper. Go back and finish off with 400 or 600 grit 3M **Wetordry™** brand sandpaper.
5. Knives
 - a. Use break-away blades
 - b. Use new tip after 3 cuts
 - c. Use stainless steel blades

Film Inspection

Inspect Before Leaving For Application Site

1. Correct Film
2. Correct Sizes
3. Free of Visual Defects
 - a. Edge damage
 - b. Buckles
 - c. Wrinkles
4. Sufficient amount of film and proper run number

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Note on Installation of Safety & Security Films

3M™ Safety & Security films install differently than the standard Sun Control or Architectural films. Because they are much thicker, proper installation requires added squeegee pressure and special technique to ensure maximum water removal. Oftentimes a special security film squeegee is required. In addition, some water may remain behind, causing a haze and blotchy appearance. This is completely normal and may take several weeks to dry. For the best results, follow the techniques outlined below.

3M™ Ultra Series Safety & Security films feature a unique microlayer construction that makes them more flexible than films of similar thickness. While this allows for relatively easier application, it is still recommended to security film installation techniques. When cutting 3M™ Ultra Series films, it is required that the film be cut all the way through -- do not try to tear at an edge. It may pull the film off the glass requiring additional spray and reapplication.

Window Preparation

Whenever possible, the customer should provide clear access to window

Protect floor, carpet, window ledge, wall, etc., with suitable absorbent material such as a drop cloth. It is not recommended to use plastic sheeting on the floor as it may become too slippery.

If possible, turn off heating/AC and ventilation ducts to reduce dirt and dust in the air or on the glass.

Set up film dispenser (or box) for cutting.

Have tools and supplies as close to the window as possible. A tool belt for the applicators is recommended.

Clean Glass and Frame

Wipe down window frame with damp cloth or sponge.

If window putty or seal is old or cracked, tape or seal prior to washing glass.

Wash window using pressure spray tank and slip solution.

Thoroughly flush edges.

Scrape glass using window scraper and proper blades. If necessary, use White 3M ScotchBrite™ scrubber to remove additional residue.

Thoroughly rinse glass from top to bottom with pressure spray tank.

Squeegee entire glass surface.

Dry glass edge and window frame.

Film Application

Lightly spray glass with slip solution.

Cut film 1" (25 mm) wider and longer than glass surface

Lay film on glass with liner or adhesive side toward you.

Remove liner, Spray film adhesive with slip solution as liner is removed.

In dry conditions, to minimize dust, you may want to spray the liner with some slip solution before removing.

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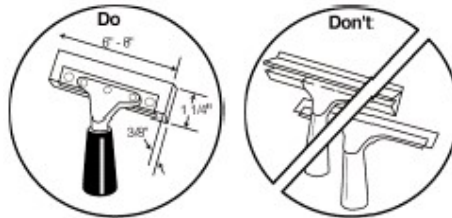
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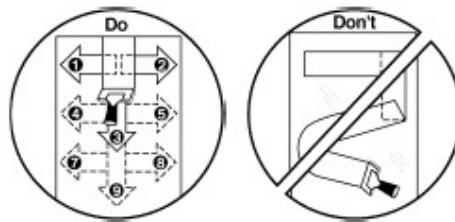


Installation - Flat Glass Window Films

- Wash fingers with slip solution.
- Turn film around and apply to glass.
- Position right side and top, leaving 1/8" (3 mm) border between the edges of the film and frame
- If window is not square; all edges might need trimming.
- Squeegee film to glass using proper squeegee. The proper squeegee is no more than 6 inches wide. The squeegee should be straight, sharp, flat and free of cuts nicks or other defects. The "Blue Max" is recommended. If the blade is too hard or soft, water removal will be difficult.



- Lightly spray film surface with slip solution.
- Use proper squeegee pattern and use both hands to apply firm pressure:



- Always keep squeegee blade lubricated with slip solution.
- The first squeegee pass is the most critical for removing water to achieve a high-quality installation. Be sure to apply firm pressure using both hands and 50% overlap on the first pass.
- Thicker films compound the difficulty of removing the maximum amount of water on the first pass. Illustrated below are two squeegee techniques. The technique on the left is acceptable for thinner films (less than 6 mils thick). For thicker films, it is recommended to use the technique illustrated on the right:

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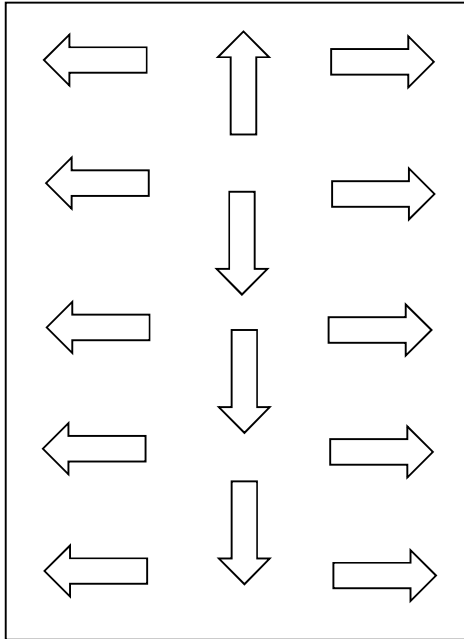
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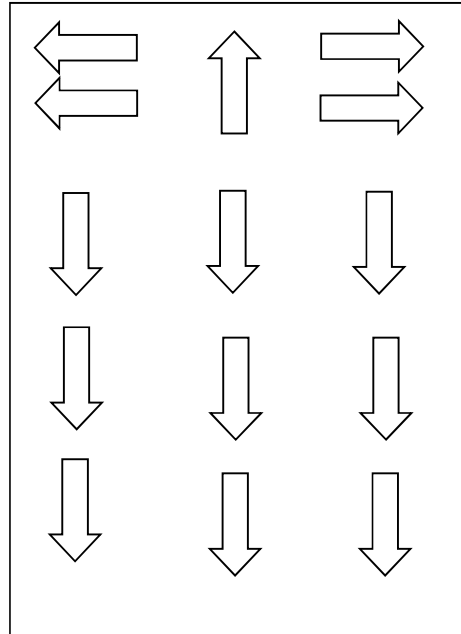
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Thin Films Technique



Thick Films Technique

- The Thick Films Technique will produce great results for thin films but the Thin Films Technique may not produce acceptable results for thicker films.
- Allowing gravity to work with you to remove the water helps achieve a quality installation with minimal effort.
- Squeegeeing more than once should not be necessary if properly done the first time
- Trim film to size using a trimming guide and OLFA knife to within 1/8" (3 mm) of window frame.
- Always use new blade tip after a maximum of 3 cuts for thin films and after every cut for security films.
- Re-lubricate with slip solution and re-squeegee (using squeegee and squeegee pattern mentioned above) until all water is removed.
- Bump film edge with absorbent lint-free towel wrapped around edge of five-way tool.
- Wipe frame edge dry.

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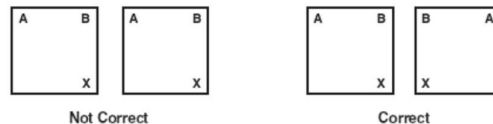
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Splicing

- WHEN SPLICING ALWAYS USE THE SAME ROLL OF FILM FOR THE ENTIRE WINDOW. Extremely minor differences in visual aesthetics, which may be evident from roll to roll, will only be seen when a window film is spliced. These differences would not be visible when the films are applied to different windows
- Position and direction of splice must be determined by salesperson and customer prior to film installation.
- Leave instructions with customer that window washers should be aware of splice and squeegee window from direction of film that is on top.
- Always match factory edge to factory edge - Mark edge with masking tape.
- To reduce the risk of splice joint gap, squeegee parallel to the film edges to be joined



Overlap Splice

1. Overlap splice pieces about 1" (25 mm) and draw back to 1/8" (3 mm)
 - a. Horizontal splice - upper piece overlapping lower
 - b. Vertical - Left-hand piece over right-hand piece
2. Slowly squeegee parallel to overlap splice - lubricate film as required
3. Squeegee out maximum amount of water

Butt Splice / Cut Through Splice

1. Overlap film pieces 1" (25 mm)
2. With new sharp blade and a straight edge, cut through both pieces in exact center of overlap
NOTE: Use a new blade for each and every splice cut
3. Remove small piece from top, lift corner of bottom panel and remove lower smaller piece (spray water on splice during this process)
4. Slowly squeegee parallel to splice - lubricate as required
5. Squeegee out maximum amount of water

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