Installation Guidelines

Step One

Preparing the Location

Be aware of the fragility of decorator items. Consult with customers about moving objects to a safe place. Your customer may wish to minimize your own liability or inform you of special considerations about how to handle certain objects. Do not push or drag flower pots or furniture across floors without the customers approval. Where necessary, remove draperies, blinds and other objects near the window and work area or ask your customer to do so before you arrive. Draperies can generally be safely tied back.

Allow plenty of room for equipment and, when working in commercial areas, such as offices or retail outlets, be sure not to interfere with their normal business routine.

Use drop cloths or towels to cover all exposed surfaces around windows to prevent contact with your cleaning and application solutions.

Use a location that is out of the way of foot traffic to set up your materials and tools. Lay out a large drop cloth to protect both the flooring and your film and tools. Lay out your supplies/tools on this drop cloth for ready access during your installation activities.

Always use extra precautions to protect yourself and your company from any liabilities.

Step Two

Cleaning the Window

1) Inspect the window for any signs of dirt, paint or silicone before wetting. If necessary, remove all such contaminants with small blades, and then sweep the dust away with a stiff brush. This "dry scrape" is generally only necessary with windows having older or painted glazing. (Please read “Note” at end of Step 3.) If you find residual adhesive from signs that have been removed, this should be removed with cleaning solution and a scraper.
2) Cover the entire glass area with cleaning solution. Then, using the Triumph scraper, completely scrape the whole window. Try not to get the blades stuck in the window’s edges, which could possibly damage the gasket system or crack the glass. To avoid damage to the rubber gaskets, use a slanting angle with a downward motion (this will also help safeguard the edges of your blade).
3) Spray the pane again and scrub with a non-scratching nylon pad.
4) Spray the pane again and this time, dry the entire window with a soft-bladed squeegee using level, horizontal strokes.
5) Using a soft towel, clean around the window frame to wipe away any solution and dirt that may be left. Wipe all corners, moldings and sills. Inspect.
6) Stroke dry the glass edges where the glass and gasket meet with a paper towel wrapped Teflon hard card (one paper towel sheet should be sufficient).

Step Three

Preparing the Window Film for Lay-Up

There are three systems widely in use today for stripping the liner and laying up the film.

System A: Using a Window for "Holding-Board"
(Recommended for use on smaller pieces of glass)

1) Spray an adjoining window that has been squeegeed to remove any dirt and/or dust
2) Place the film with the release liner facing you on the adjoining windowpane
3) Carefully begin liner removal from a corner (See Figure 2) using either tape or your fingernail

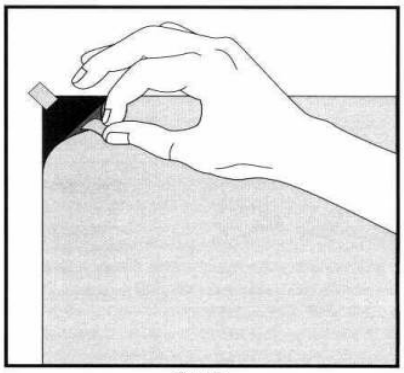

Figure 2

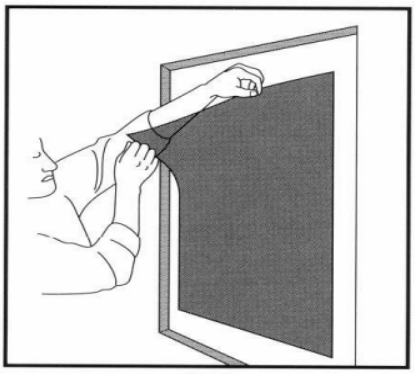

Figure 3

4) The **"FINAL PREPARATION"** can now be done once this piece of film is ready to peel. Be ready to prepare your film first before the final prep—timing is important. Because of various factors that can cause dust, dirt, etc. to settle on your primed surface, squeegeeing the window is best done just seconds before the installation of the film:

   a) Apply a consistent spray mist of cleaning solution on all of the glass
   b) With the proper width channel squeegee, start from the top comer and move across the window in one nonstop sweep of the glass
   c) Be careful to not to leave any "marks" where the squeegee has stopped and started up again
   d) You will not need to use paper towels at this stage since towels were used to clean and pick up dirt around the edges after scraping

Smoothly and gently pull the release liner off while spraying the adhesive surface with your installation solution once you have completed the **"FINAL PREP"**. Then peel the film off the glass (See Figure 3) and mount on the unit you have just cleaned.

NOTE: You may want to pre-cut the film to fit before peeling the release liner when there is significant concern for contaminants leaking into the edges of your installation (this applies to most Safety & Security Film installations). Contamination is a greater problem when working with: a) French or Colonial panes, b) arched or irregular shaped window, c) panes with painted or stained frames, d) panes with wood frames, e) panes with old gaskets or crumbling putty.

System B: Using the 'Reverse Roll' Installation

(Recommended on Glass 36”x36” or Larger)

The Reverse Roll Technique is the most effective way to remove the release liner while improving on the treatment of the film.

First, cut the film by at least an inch or two over the edges of the window pane. To cut film out of the box, position the box so that the film passes over the core (not under) as you pull it to the desired length. If you need to cut the film smaller than roll size to more accurately meet the width or length of the window, set the extended blade of your Olfa into the cardboard with the cutting edge facing the film. Feed the film across the blade so that when you pull the film from the box, the blade will cut the film to its desired width or length (See Figure 4). It should cut nicely, yet be aware of which side is your 'factory cut edge" for placement against the straight frame of your window when installing later. Cut to the desired width or length.

Next, with the release liner side up, carefully roll the film up toward the box—your rolled piece should be about one inch in diameter. When there are about three inches left to be rolled, spray the front and back with solution. If pre-cutting away from installation sight, tape the roll. Do not pre-cut more than one day in advance.

Begin gently peeling the liner and feed the liner on to the roll (See Figure 5).

You are ready for the “**FINAL PREP"** of your window (See Step Four in option above).

Your film is ready to be installed on the glass’ clean surface after the final prep. Pick the roll up, separate the liner and make sure it is situated on the roll once again. Spray installation solution on the whole glass being extra careful along the top 2 inches of the window. You must not saturate the glass which would cause solution to drip drown from the frame, bringing contamination with it—a very light mist will do. The 3-inch portion of the film should be held in your fingertips firmly while gently gripping the roll in your palms (See Figure 7).

When you are ready and in position, you have two options:

1) Toss the roll lightly toward the ground while tightly holding the 3-inch portion of the film in your fingertips (See Figure 8). The release liner will unpeel from the adhesive’s surface and then appear on the opposite side (See Figure 9). You can now install the film.

or

2) Unroll the film several inches more (with the liner going onto the back side of the film), spray the exposed film with solution, and carefully lay this exposed film into position (in either direction---left or right, up or down---you choose). Carefully unroll the remainder of the film tube downward (or across) the pane. Spray SR coat with solution, and squeegee in place and trim as instructed in Step Four and Step Five.

'Reverse Roll' Installation

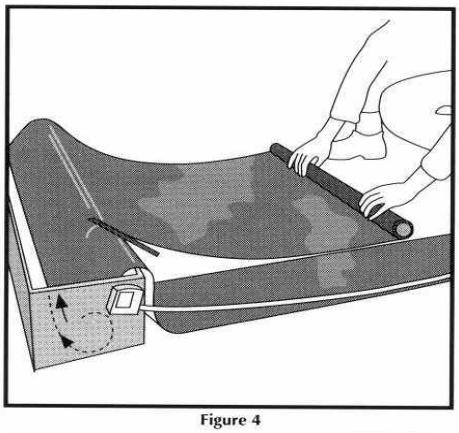

Figure 4

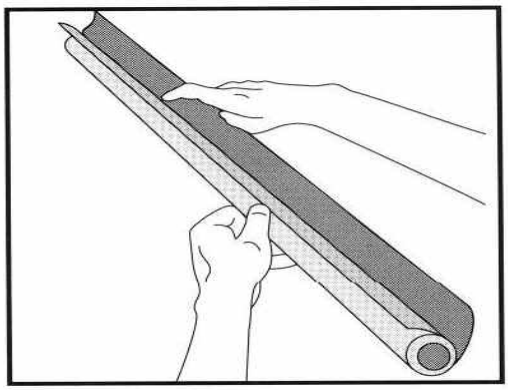

Figure 5

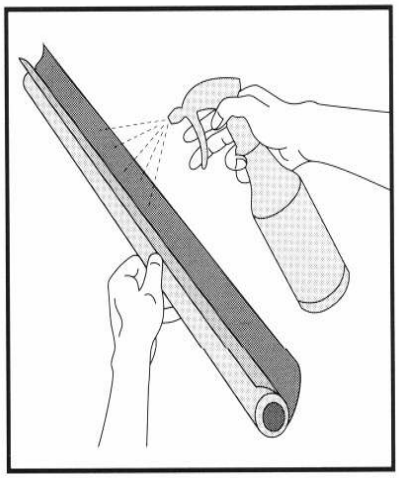

Figure 6

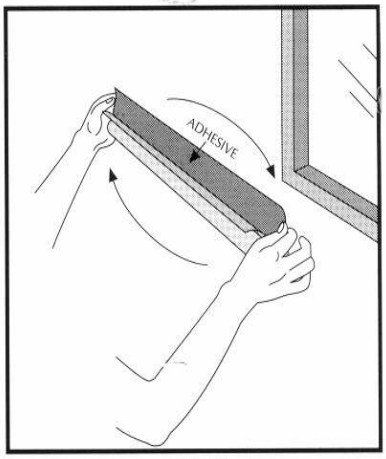

Figure 7

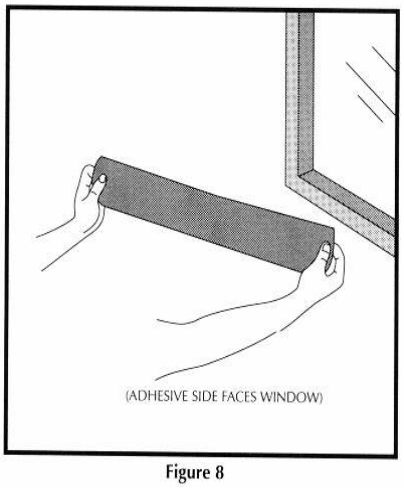

Figure 8

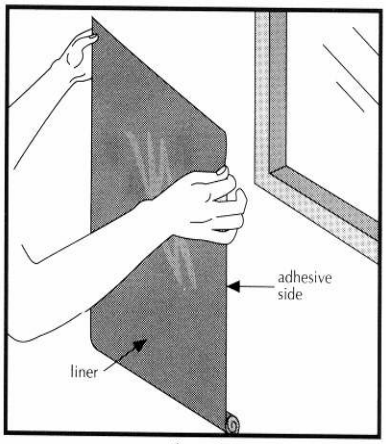

Figure 9

System C: Team Installation

When an installer is unable to perform the reverse roll, team installation can be used. There are differences when employing the two-person/teamwork technique:

1) Installer #1 cleans the window while installer #2 measures the window and gets the film ready

2) Installer #1 pulls the film from the box and holds it up at the desired length while installer #2 cuts it

3) After the liner and film have been separated at a top corner, installer #1 holds it in place while installer #2 removes the liner slowly and evenly while spraying the film's adhesive side

4) Installer #2 can then spray the glass just before installer #1 applies the adhesive side of film to the glass

From here, installation is the same with the added benefit of two people working together saving several steps.

Step Four

Installing the Film

1) Spray the entire glass surface with installation solution (except the top two inches). A substantial amount of spray should be used, as consistently layered over the surface of the glass as possible, allowing for sufficient "slip". The installation solution on the glass will enable the film, when held at a level position, to draw up easily to the glass and then can simply be maneuvered into the proper location.

2) Use your installation solution to spray mist the film SR coat/surface facing the room. This step will enable the squeegee to "slip" across the film's surface without moving the film. Using the squeegee, make two or three horizontal tack strokes starting in the middle of the film and moving outward, to keep the film in place before trimming. Make sure film is positioned properly on window before tacking.

Step Five

Trimming the Film

The most common tool used for edge trimming is the 5-way tool which helps to accurately press the overlap into the closest corner point(s) as well as to make close and consistent cuts.

With the 5-way tool held perpendicular to the glass, or at an angle you are comfortable with, use an Olfa knife to trim the film on all sides leaving 1/8" to 1/32" inch border. Be sure to cut from out of the comers instead of into them. Avoid kinking the film at these areas.

Trimming the film before squeegeeing provides the solution and loose dirt underneath an opening for removal. This is extremely important, otherwise, you could contaminate the clean window because the dirt from the gasket system and corners will get drawn back underneath the film if you squeegee with the film still overlapping the frame.

Step Six

Final Squeegee Passes & "Bumping"

1) After trimming, spray the interior side of the film with solution again. Now, you're ready for final squeegee operations. Begin at top center, work vertically and horizontal to the sides, moving down the window. Squeegee entire glass with firm, consistent pressure and angle with overlapping strokes (See Figure 12). Failure to do so will result in water left behind.

2) Wrap two sections of paper toweling around a 5-way tool. With firm pressure, being about 6 inches from the frame, squeegee remaining moisture from between glass and film. This procedure is called 'bumping." As paper towels absorb the moisture, continually re-position them for best results and to prevent sand or grit from scratching the surface of the film. Also, it is best to use this procedure on the entire surface of all sputtered and safety films (with SR coating).

3) Use the 'bumping" technique only near the edges of the windows. If using a non-SR coated film, do not wipe the main surface of the glass with paper toweling.

4) Remove application solution, residue and streaks by lightly misting window with silicone polish/cleaner once all the film has been mounted. Polish with a dry paper towel for a smooth finish.

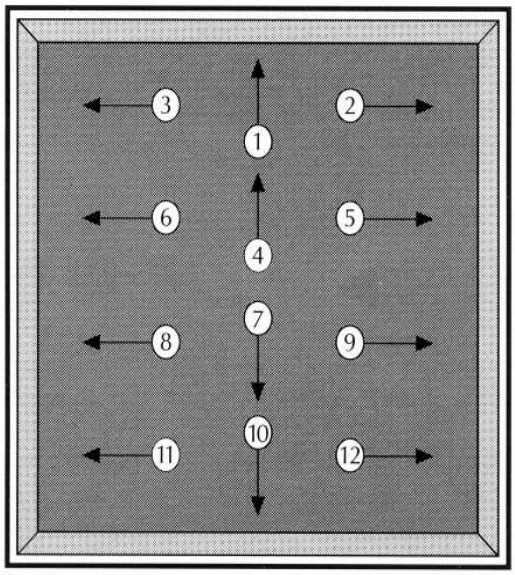

Figure 12

Step Seven

Inspection

1) It is best to complete your final inspection with both an interior and exterior review. From the exterior, you can more easily spot imperfections such as:

    - Air bubbles
    - Water pocket places where application solution settles to one spot

    It is important to get rid of air bubbles and water pockets (caused by light or uneven squeegeeing). Sometimes, areas of pooled water will contain small air bubbles that will cluster into one large bubble; as the solution dries out, this leaves visible marks. Re-squeegee or hard-card as needed before the adhesive sets.

If you see an accumulation of dirt or air bubbles, you can peel back the film (if it is soon after the installation), wash off the dirt with solution and squeegee again. If you do this, make sure to thoroughly dry the edges. If you don't, water buildup alongside the border will be dragged under the film leaving behind a line(s) of contamination after squeegeeing down the film.

2) Don't be alarmed by the very tiny water bubbles or any apparent cloudiness between the film and glass. These are normal. About 10-15% of the moisture stays between the glass and film immediately following installation. The customer should be advised of the curing stage as some minor distortions may exist several days after the installation. As long as you have squeegeed properly and have not used excessive application solution, you can be confident that the moisture will evaporate in a short time.

Step Eight

Seaming Windows

(Only necessary when windows are larger in both directions that the widest film available)

Three methods are commonly used in the field:

1) Simple overlap
2) Factory edge-to-edge
3) "Butt" Splicing

1. Simple overlap:

1) Measure and mark the center of the window on top and bottom frames. Make sure you measure from the same side, top and bottom
2) Follow normal cleaning and trimming procedures. Apply the first piece of film to the left side of the window, positioning the right edge (as you face the window) on the centerline (use factory cut edges for the centerline)

3) Trim three sides of the film
4) Install the second piece of film to overlap the first installed piece about 1/2"
5) Position the second piece slowly until the overlap width is about 1/16"
6) Carefully squeegee the overlap area
7) Squeegee the rest of the glass

2. Factory edge-to-edge:

Use this method only when films are: a) too thick to cut through, or b) when overlapping is not a viable aesthetic option.

The seam line can be either horizontal or vertical. Simply install two pieces next to one another, so the two factory edges are as close to each other as possible with both edges lying flat.

Remember, factory cut film edges may not always be straight and unevenness and a slight separation may occur in the seam after curing.

3. “Butt” Splicing:

This method utilizes a straight edge as a cutting guide for overlapping pieces of film.

1) Overlap both pieces around ½”
2) Carefully position the straight edge on the overlap area
3) Lightly spray the overlap area where the straight edge is situated (the moisture from the spray will help hold the straight edge in position while cutting)
4) Carefully cut through both pieces using the straight edge as a guide
5) Gently pull off the top piece and pull the inner piece out

Do not use metal rulers with nicks, cuts or dirt underneath them because they will scratch the film.

Notes:

Turning a second piece of film top to bottom (“cart-wheeling”) may be a better option for matching factory cut edges. You basically line the right edge of one piece to the right edge of the second piece or vice versa (left edge to left edge).

When more than one window needs seaming, complete each pane before doing the next.

Final Notes

Pre-cutting Film

If you precut film prior to arriving at the job site, always roll up the film with the liner to the inside of the wrap. This will lessen the probability of introducing "curl" into the film that can make installation more difficult. Moreover, this roll-up method actually prepares each piece for the reverse roll installation, dramatically speeding up the entire installation process.

Film Curl - What to do during installation

Occasionally, flat glass installers will confront a problem with film (with a DSA adhesive) slightly curling back off the glass immediately after installation.

This often occurs on panes that are directly exposed to the sun when the film is suddenly heated by solar absorption. The key to minimize possible curling is to control the installation setting of those sun-exposed windows. Options include:

1) Careful scheduling/timing your installation to avoid the hottest time of the day

   or

2) Using external shading devices, such as solar screen fabric/netting with, if possible, glass suction cups. Shaded windows will generally eliminate the curl problem, make seaming easier, and increase your comfort level.

Installing film on non-sun-exposed windows rarely presents a curl problem, but if it does, you should immediately report the problem to your distributor, conveying the lot number, film type, severity of the problem, etc. This information will be forwarded to corporate/manufacturing for analysis, and you'll be told to return the film for warranty credit/exchange.

Summary Remarks & Advisories

COLD WEATHER: Film can be installed during the winter. Do not install film if the application solution freezes on the window.

ALARM TAPE: Film can be installed over alarm tape only if it has been properly sealed. Thoroughly check to make sure alarm tape is, in fact, sealed correctly. Make sure you do not cut the alarm tape when cleaning the windows—cut film around contact points so that it will lie flat on the glass.* Check the alarm as soon as installation is complete.

Be aware that removal of film over alarm tape may damage that tape. Installation may also diminish the effectiveness of the alarm system.

DECALS: Remove any decals that would come between the glass and film and be sure to let your customer know you are doing so. Film can be installed over such decals, but their subsequent removal and replacement will require the removal of the film. If you elect to install over a decal, be sure that edges are smooth and flat to eliminate uneven seating.

PAINTED SIGNS AND PICTURES: Don't apply film to a window with either a painted sign or picture on the glass' interior. Unless you're **absolutely** sure you can install it correctly the first time, film removal will also remove the picture and application solution may damage signs.

FOLLOW FILM-TO-GLASS RECOMMENDATIONS: Not all films can be installed on all glazing systems. Certain films, improperly selected for certain glass types, can cause glass breakage. Please contact your distributor for information regarding the factory's film-to-glass guidelines and recommendations. If you are still in doubt regarding any application even after studying the chart, contact Technical Support at CLC, Inc. at 1-888-321-5111.

FROSTED/TEXTURED/WIRED GLASS: Film should not and cannot be applied successfully to rough, frosted-type glass and is not recommended for acrylic (Plexiglas™) or polycarbonate (Lexan™) sheeting, unless specifically manufactured for that purpose. Do not install solar control window film on sun-exposed wired safety glass; edge flaws may substantially increase the risk of glass breakage and no warranty is available for such glass.

WATER ACTIVATED DSA: As a water-activated adhesive, DSA cannot be re-activated with water, so do not attempt to do so.

RE-WET DRIED AREAS: However, you can re-wet any areas of DSA that may have raised off the glass during placement or trimming.

DROP CLOTHS: Remember to always use drop cloths to protect sensitive surfaces from over-sprays, drips, runs, etc.

INSIDE (INTERIOR) INSTALLATION ONLY: SunTek DSA films are designed for the inside (interior) of glass surfaces. While we do offer anti-graffiti films that were designed for exterior installation, never assume it's "OK" to install a film on a surface that will be exposed to the elements (sunlight, wind, rain).

CAUTION: Do not place the feet of a tall extension ladder on top of a drop cloth that is covering a smooth floor since *slipping may occur* when you are on the ladder. The rubber feet need to grip the floor directly. Place the drop cloth around the ladder *after* it has been set in place.

SAFETY REMINDER: KEEP A FIRST-AID KIT NEARBY AT ALL TIMES

*Commonwealth Laminating & Coating, Inc. (CLC, Inc.). is not legally responsible for damage to alarm systems due to film installation or film removal.