

General Care and Maintenance Instructions

Table of Contents Version 0.1

<u>Overview</u>	page 2
<u>Precautions and Safety</u>	page 3
<u>Determination of Cleaning Intervals</u>	page 4
<u>Inspection Procedures</u>	page 5
<u>Cleaning of Aluminum Finishes</u>	pages 6-8
1. Cleaning of anodized aluminum surfaces	
2. Cleaning of organics aluminum finishes (paint)	
<u>Cleaning of Glass Products</u>	pages 9-10
1. Cleaning of uncoated glass products (tinted glass is not coated)	
2. Cleaning of coated glass products (reflective glass and 4 th surface Low E)	
<u>Inspection Checklist</u>	page 11
<u>Maintenance Checklist</u>	page 12



General Care and Maintenance Instructions

Overview

For information regarding installation procedures, storage, or other items relevant prior to completed installations, see the appropriate installation instructions, or consult your Manko representative. All Manko Window Systems Inc. products are designed for minimal maintenance once properly installed. However, general cleaning and maintenance is required for long operational lifespans and warranty coverage. Occasionally, a part will break and need replacing. Most of these parts are stocked by Manko and can be shipped immediately upon request. Please contact your Manko representative for replacement parts and warranty issues. The materials in this document are based on typical window types and job conditions. Due to the custom nature of the Architectural Construction Business, some material in this document may not apply to your specific job. Manko has no control over how others may use this material. Hence, we cannot guarantee that the same results as those described herein will be obtained. Each user of the materials and/or procedures should make their own tests to determine the suitability of the materials or procedures for their own particular field use.



Precautions and Safety

- Window **insect screens are not security devices** and will not prevent a child, an individual, or any other item from falling through.
- DON'T use aggressive alkaline or acid cleaners on aluminum finishes
- DON'T use cleaners containing trisodium phosphate, phosphoric acid, hydrochloric acid, hydrofluoric acid, fluorides, chlorine based cleaners or similar compounds on anodized aluminum surfaces.
- DON'T mix cleaners or solvents. This may be dangerous as well as ineffective.
- DON'T attempt to clean hot, or sun-heated surfaces as chemical reactions on hot metal surfaces will be highly accelerated. Surfaces cleaned under these adverse conditions can become streaked or stained so that they cannot be restored to their original appearance.
- DON'T use strong cleaners on other building accessories where it is possible for the cleaner to come in contact with the painted surface. If an aggressive cleaner is required for some other component of the building, extreme care must be taken to prevent the cleaner from contacting the aluminum finish.
- DON'T allow cleaning products to dry on the anodized surface or the surrounding surfaces.
- DON'T power-wash windows; this can cause seal failure and allow water to enter the structure.
- DON'T use metal tools, razor blades, or other sharp objects and abrasive cleaners. They can damage window surfaces, scratch glass and remove exterior glass coatings.
- DON'T allow cleaners to puddle or collect at glass edges near glazing materials.
- DO follow the manufacturers recommendations for proper mixing and diluting of cleaners.
- DO test clean a small area first.
- DO remove alkaline building materials such as wet plaster and wet mortar immediately. Wash the soiled area with clean water. If these materials are allowed to remain in contact with the surface for an extended period of time, staining will occur.
- DO begin with the upper story and work down when cleaning exterior, multi-story windows.
- DO clean and rinse one area at a time.

Manko will not be responsible for defects caused by exposure to corrosive chemicals.



General Care and Maintenance Instructions

Determination of Minimal Maintenance Intervals

The required frequency of inspections and maintenance depends in part on the standard of appearance that is required, and the need to remove contaminants that cause damage during prolonged contact with the system. Sheltered areas and arid regions can be more at risk of coating degradation than exposed areas. This is because wind-blown salts and other pollutants may adhere to the surface and will not be cleaned away with rainfall. These areas should be inspected and cleaned on a more regular basis. The below table is based on general climatic conditions and typical exposure levels. This table is the minimum required inspection and maintenance intervals. Job specific environments and micro climates can necessitate that the regularity of inspection and maintenance to be increased. Damage of, or deterioration of product due to lack of maintenance is not warrantable. Inspection and maintenance records must be maintained for warranty considerations.

Environment Type	Corrosivity Level	Minimum Required Maintenance Interval
Non-hazardous Environment with Minimal Exposure Level	Very Low to Low	Every 12 Months
Typical Commercial Environment with Average Exposure Level	Medium	Every 12 Months
Industrial or High Humidity or Exposure to Swimming and Leisure Pools with Average Exposure Level	High	Every 6 Months
Coastal Environment - 1-10 Miles from Saltwater Coast - with Average Exposure Level	High	Every 6 Months
Marine or Coastal Environment - Less Than 1 Mile from Saltwater Coast with Average or High Exposure Level	Very High	Every 3 Months
Heavy Industrial Environment – Typically Man Made Micro Climates Always considered High Exposure Level	Extreme	Consult Factory Representative



General Care and Maintenance Instructions

Inspection Procedures

The following inspections are to be performed and documented at the intervals set forth in the section of this document titled **Determination of Minimal Maintenance Intervals**. Failure to perform and document this procedure invalidates manufacturer's warranty. See inspection checklist at end of this document.

- Inspect for water leaks around the frame
- Inspect all caulking and sealants for voids, gaps and damage
- Inspect all gaskets and weather stripping for damage or shrinkage as well as general functionality
- Inspect insulated glass for cracks, runs, or moisture between the glass
- Inspect seal between insulated glass and frame
- Inspect and verify that all water drainage/weeping pathways are free of debris and are allowing proper drainage of water
- Inspect all locks for proper operation and function
- Inspect for Galvanic Corrosion (especially where aluminum edges are exposed)
- Inspect for Caustic Corrosion (especially where aluminum edges are exposed)
- Inspect insect screens (if applicable) for missing or loose fasteners and holes or tears in mesh

Sliding Window Specifics

- Inspect hardware and verify that all fasteners are present and have not loosened
- Inspect sliding track for debris or damage
- Inspect rollers for flat spots
- Inspect and verify rollers are operating freely and properly

Hung Window Specifics

- Check sash balances for proper alignment and operation
- Verify that operable sash is held open properly when opened
- Inspect and verify that opening force and closing force of operable sash are approximately equal
- Replace sash balances if damaged or corroded
- Clean exposed moveable sash balance parts of all dirt and apply a light coat of White Lithium Grease being careful not to apply too much grease as that promotes dust buildup
- Inspect hardware and verify that all fasteners are present and have not loosened

Projected Window Specifics

- Check hinges for damage and verify proper function.
- Wipe down hinge tracks with a cotton cloth to remove dirt buildup
- Inspect hardware and verify that all fasteners are present and have not loosened



Cleaning of Aluminum Finishes

1. Cleaning of Anodized Finishes

(It is especially important to not allow stucco or other caustic materials to set on the anodized finish. These building materials are caustic and will “eat” the finish.)

A. Removal of light surface soil

1. The simplest procedure is to flush the surface with water using light pressure to dislodge the soil. If soil is still adhering after drying, then a mild detergent will be necessary.
2. Mild soaps or detergents ruled safe for bare hands should be safe for anodized aluminum. Stronger detergents should be carefully spot tested. With any soap or detergent the finish should be thoroughly rinsed with clean water and dried.
 - a. When mild detergent or mild soap is necessary for removal of soil, it should be used with brushing or sponging. The washing should be done with light uniform pressure. Apply cleaners only to an area that can be conveniently cleaned without changing position. The surface must be thoroughly rinsed with clean water. The rinsed surface can be permitted to air dry or be wiped dry with a chamois, squeegee or lint-free cloth.
 - b. Run-down of cleaner (from any operation) to the lower portions of the building should be minimized and these areas should be rinsed as soon as possible and as long as necessary to lessen streaking, etc.. Do not allow cleaning chemicals to collect on surfaces or to "puddle" on horizontal surfaces, crevices, etc.. These areas should be flushed with water and dried. Always clean coated surfaces down from top to bottom and follow with a thorough rinsing with clean water.

B. Removal of medium to heavy surface soil

If surface soil still adheres after using procedures under “Removal of Light Surface Soil”, cleaning with the assistance of a cleaning pad can be employed. Hand scrub the metal surface using a palm-sized nylon cleaning pad. Thoroughly wet pad with clean water or a mild detergent cleaner or pumice powder. Start across the top and work down, rubbing the metal surface in the direction of the metal grain with uniform pressure. After scrubbing, the metal surface should be rinsed thoroughly with clean



General Care and Maintenance Instructions

water to remove all residues. It may be necessary to sponge the surface while rinsing, particularly if the cleaner is permitted to dry on the surface. Solvents may be used to remove non-water soluble deposits. Extreme care must be exercised when solvents are used since they may damage organic sealants, gaskets and painted finishes. If solvents are used, rinse the surface completely with clean water and allow the surface to air dry or wipe dry with a chamois, squeegee or lint-free cloth.

CAUTION: Many organic solvents are flammable and/or toxic, refer to MSDS for proper Handling and disposal.

2. Cleaning of Organic Finishes (painted finishes)

(It is especially important to not allow stucco or other caustic materials to set on the organic finish. These building materials are caustic and will “eat” the finish.)

A. Removal of light surface soil

- 1.** The simplest procedure is to flush the surface with water using light pressure to dislodge the soil. If soil is still adhering after drying, then a mild detergent will be necessary.
- 2.** Mild soaps or detergents ruled safe for bare hands should be safe for organic finishes. Stronger detergents should be carefully spot tested. With any soap or detergent the finish should be thoroughly rinsed with clean water and dried.
 - a.** When mild detergent or mild soap is necessary for removal of soil, it should be used with brushing or sponging. The washing should be done with light uniform pressure. Apply cleaners only to an area that can be conveniently cleaned without changing position. The surface must be thoroughly rinsed with clean water. The rinsed surface can be permitted to air dry or be wiped dry with a chamois, squeegee or lint-free cloth.
 - b.** Run-down of cleaner (from any operation) to the lower portions of the building should be minimized and these areas should be rinsed as soon as possible and as long as necessary to lessen streaking, etc.. Do not allow cleaning chemicals to collect on surfaces or to "puddle" on horizontal surfaces, crevices, etc.. These areas should be flushed with water and dried. Always clean coated surfaces down from top to bottom and follow with a thorough rinsing with clean water.



General Care and Maintenance Instructions

B. Removal of medium to heavy surface soil

A mild solvent such as mineral spirits may be used to remove grease, sealant or caulking compounds. Stronger solvents or solvent containing cleaners may have detrimental effect on painted finishes, particularly those with clear topcoats. To prevent harm to the finish, these types of solvents or emulsion cleaners should be spot tested and the coating manufacturer should be consulted. Care should be taken to assure that no marring of the surface is taking place in this manner since this could give an undesirable appearance at certain viewing angles. Cleaners of this type are usually applied with a clean cloth and removed with a cloth. Do not apply excess pressure or “scour” surfaces. Remaining residue should be immediately washed with mild soap and rinsed with water. Use solvent cleaners sparingly and do not allow to get on surrounding materials..



Cleaning of Glass Products

1. Cleaning of Uncoated Glass Products

- Use a wash solution that includes a mild soap or detergent, or a slightly acidic cleaning solution.
DO NOT use any additives that contain hydrofluoric acid, or have the possibility of forming hydrofluoric acid. Hydrofluoric acid will quickly and permanently damage the glass surface.
DO NOT use harsh cleaners, abrasives or alkaline materials.
- Cleaning of tinted and reflective glass surfaces in direct sunlight should be avoided. The surface of the glass may be too hot to achieve satisfactory results and, in extreme cases, contact with cold water could lead to glass breakage.
- Use clean, grit free cloths, together with the wash solution, to clean the glass. Sufficient wash solution should be used to ensure that debris can be removed without causing abrasion related glass damage. Remember, in addition to being a solvent for cleaning dirty glass, the wash solution acts as a lubricant to “float” loose debris off of the glass surface. Care must be taken to ensure that gritty dirt particles picked up by the cloth do not scratch the glass.
- For best results, clean the glass beginning at the top and working down.
- Immediately follow the washing, rinse with liberal amounts of clean rinse water.
- Promptly remove excess rinse water with a clean, good quality squeegee. Squeegees must be in good condition, clean and undamaged. In particular, any debris must be removed from the squeegee to prevent possible glass damage.
- Remove grease and glazing materials with commercial solvents such as xylene, toluene, Leptyne[®], turpentine, mineral spirits or naphtha. Immediately follow with a normal wash and rinse as described above. Be careful not to damage glazing or insulating glass unit seals by excess application of strong solvents. Comply with all of the solvent manufacturer’s directions concerning safety, proper handling, toxicity, and flammability warnings.
- DO NOT use metal scrapers or tools to attempt to remove stubborn materials or stains. In extreme cases, a combination of the appropriate solvent and a PLASTIC scraper, carefully used, may work. If the glass is heat strengthened or tempered, even a plastic scraper may dislodge very small surface debris that has fused to the glass surface during the heat treating process and cause glass damage. You are encourage to refer to GANA publication TD-02-0402: Heat- Treated Glass Surfaces Are Different and GANA publication TD-01-0300: Proper Procedures for Cleaning Architectural Glass Products for a discussion of heat treated glass surfaces and for a more detailed discussion of the cleaning of heat strengthened and tempered glass.



General Care and Maintenance Instructions

2. **Cleaning of coated glass products**

Coated glasses can be cleaned using the previous recommendations except for the following:

- Acidic cleaning solutions are not recommended. Use only mild soaps or detergents.
- Abrasive cleaners, fluoride salts, or hydrogen producing compounds are not recommended.

In addition, because fingerprints, stains, smears, dirt, scum, sealant residue, scratches, and abrasions are more noticeable on reflective glasses than on non-reflective glass, take extra care in handling and cleaning the glass. Finally, reflective and coated glass that is glazed with the coating exposed to the outdoors should be cleaned more frequently (a minimum of 3 to 4 times per year). Materials, such as rundown from metals and masonry, such as concrete, stucco, etc. should be cleaned from the glass as soon as they occur so that they are not permitted a long residence time on the coated glass surface. If such rundown is not quickly removed, permanent staining and/or glass damage may occur. It should be understood that while such rundown residue will be more noticeable on reflective glass, it can also occur with uncoated glass, resulting in similar permanent staining and/or glass damage.



General Care and Maintenance Instructions

Inspection and Maintenance Checklist - Page 1 (Inspection)					
Building Location/Name _____					
Inspection Date ____/____/____			Inspection Interval = _____		
Inspected By _____					
Yes	No	Exterior	Yes	No	Interior
<input type="checkbox"/>	<input type="checkbox"/>	Aluminum Surface	<input type="checkbox"/>	<input type="checkbox"/>	Insect Screen (If applicable)
<input type="checkbox"/>	<input type="checkbox"/>	Dirty	<input type="checkbox"/>	<input type="checkbox"/>	Missing
<input type="checkbox"/>	<input type="checkbox"/>	Scratched, Discolored, Blisters	<input type="checkbox"/>	<input type="checkbox"/>	Loose
<input type="checkbox"/>	<input type="checkbox"/>	Glass to Frame Sealant Joint	<input type="checkbox"/>	<input type="checkbox"/>	Mesh Damaged or Loose
<input type="checkbox"/>	<input type="checkbox"/>	Cracks, Voids, Loss of Adhesion	Weatherstripping (If applicable)		
<input type="checkbox"/>	<input type="checkbox"/>	Perimeter Frame to Substrate Caulking	<input type="checkbox"/>	<input type="checkbox"/>	Missing or Loose
<input type="checkbox"/>	<input type="checkbox"/>	Cracks, Voids, Loss of Adhesion	<input type="checkbox"/>	<input type="checkbox"/>	Torn, Cracked, or Damaged
<input type="checkbox"/>	<input type="checkbox"/>	Glass Surface	<input type="checkbox"/>	<input type="checkbox"/>	Brittle, Gummy, Discolored
<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Water Drainage/Weep Holes		
<input type="checkbox"/>	<input type="checkbox"/>	Scratched, Cracked or other Damage	<input type="checkbox"/>	<input type="checkbox"/>	Observable and Unobstructed
<input type="checkbox"/>	<input type="checkbox"/>	Insect Screen (If applicable)	<input type="checkbox"/>	<input type="checkbox"/>	Allowing proper Drainage
<input type="checkbox"/>	<input type="checkbox"/>	Missing	Locking Hardware (If applicable)		
<input type="checkbox"/>	<input type="checkbox"/>	Loose	<input type="checkbox"/>	<input type="checkbox"/>	Missing or Loose
<input type="checkbox"/>	<input type="checkbox"/>	Mesh Damaged or Loose	<input type="checkbox"/>	<input type="checkbox"/>	Functioning Freely and Properly
<input type="checkbox"/>	<input type="checkbox"/>	Weatherstripping (If applicable)	<input type="checkbox"/>	<input type="checkbox"/>	Discolored or Tarnished
<input type="checkbox"/>	<input type="checkbox"/>	Missing or Loose	Sliding Window Specifics (If applicable)		
<input type="checkbox"/>	<input type="checkbox"/>	Torn, Cracked, or Damaged	<input type="checkbox"/>	<input type="checkbox"/>	Operable Hardware Fasteners Present and Tight
<input type="checkbox"/>	<input type="checkbox"/>	Brittle, Gummy, Discolored	<input type="checkbox"/>	<input type="checkbox"/>	Sliding Track is Free from Debris
<input type="checkbox"/>	<input type="checkbox"/>	Water Drainage/Weep Holes	<input type="checkbox"/>	<input type="checkbox"/>	Rollers are Operating Freely, Properly, in Adjustment
<input type="checkbox"/>	<input type="checkbox"/>	Observable and Unobstructed	Hung Window Specifics (If applicable)		
<input type="checkbox"/>	<input type="checkbox"/>	Allowing proper Drainage	<input type="checkbox"/>	<input type="checkbox"/>	Operable Hardware Fasteners Present and Tight
<input type="checkbox"/>	<input type="checkbox"/>	Interior	<input type="checkbox"/>	<input type="checkbox"/>	Sash Balances are Aligned and Operating Properly
<input type="checkbox"/>	<input type="checkbox"/>	Aluminum Surface	<input type="checkbox"/>	<input type="checkbox"/>	Exposed Moveable Parts are Clean and Lubricated
<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Projected Window Specifics (If applicable)		
<input type="checkbox"/>	<input type="checkbox"/>	Scratched, Discolored, Blisters	<input type="checkbox"/>	<input type="checkbox"/>	Operable Hardware Fasteners Present and Tight
<input type="checkbox"/>	<input type="checkbox"/>	Glass Surface	<input type="checkbox"/>	<input type="checkbox"/>	Hinges are Undamaged and Working Properly
<input type="checkbox"/>	<input type="checkbox"/>	Dirty	<input type="checkbox"/>	<input type="checkbox"/>	Operable Hardware Tracks are Clean
<input type="checkbox"/>	<input type="checkbox"/>	Scratched, Cracked or other Damage	<input type="checkbox"/>	<input type="checkbox"/>	Exposed Moveable Parts are Clean and Lubricated
<input type="checkbox"/>	<input type="checkbox"/>	Moisture Between Panes	Glass to Frame Sealant or Gasket		
<input type="checkbox"/>	<input type="checkbox"/>	Perimeter Frame to Substrate Caulking	<input type="checkbox"/>	<input type="checkbox"/>	Cracks, Voids, Loss of Adhesion
<input type="checkbox"/>	<input type="checkbox"/>	Cracks, Voids, Loss of Adhesion	Perimeter Frame to Substrate Caulking		
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	Cracks, Voids, Loss of Adhesion



General Care and Maintenance Instructions

Inspection and Maintenance Checklist - Page 2 (Maintenance)

Building Location/Name _____

Inspection Date ____/____/____

Maintenance Interval _____

= _____

Maintenance Performed By _____

Ye s	No	Exterior	Ye s	N o	Interior
<input type="checkbox"/>	<input type="checkbox"/>	Aluminum Surfaces and Finishes Cleaned as per Manufacturers Recommendations	<input type="checkbox"/>	<input type="checkbox"/>	Aluminum Surfaces and Finishes Cleaned as per Manufacturers Recommendations
<input type="checkbox"/>	<input type="checkbox"/>	Glass Surfaces Cleaned as per Manufacturers Recommendations	<input type="checkbox"/>	<input type="checkbox"/>	Glass Surfaces Cleaned as per Manufacturers Recommendations

List remedy for each deficiency, defect, or issue noted on page 1 (Inspection Checklist) in the following area

Deficiency	Remedy

