

WINDOWS

Table of Contents

Operable and Fixed Windows • Series 7400

SECTION D2	PAGE
SPECIFICATIONS	02-D2 and 03-D2
SPECIAL FEATURES AND GLASS SIZE FORMULAS	04-D2
HARDWARE	05-D2 and 06-D2
TYPICAL DETAILS FIXED WINDOW, 1" (25) GLASS	07-D2
TYPICAL DETAILS IN-SWING CASEMENT, 1" (25) GLASS	08-D2
TYPICAL DETAILS OUT-SWING CASEMENT, 1" (25) GLASS	09-D2
OPTIONAL ACCESSORIES	10-D2



Project: 400 Orleans, Chicago, IL

Due to the diversity in state/provincial, local, and federal laws and codes that govern the design and application of architectural products, it is the responsibility of the individual architect, owner, and installer to ensure that products selected for use on projects comply with all applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

NOTE: Dimensions in parentheses () are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter	Kg - kilogram
Pa - pascal	KPa - kilopascal
MPa - megapascal	

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Specifications

Operable and Fixed Windows • Series 7400

SECTION 08 51 13 ALUMINUM WINDOWS

Drawings and specifications are based on the Series 7400 Thermal AW75 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

PART 1 GENERAL

1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.

B. Glass and Glazing

1. All units shall be factory glazed.
- OR

1. Reference Section 08 80 00 for Glass and Glazing.

List work and materials related to this section but specified in other sections.

1.02 Related Work

Section 08 40 00 - Entrances and Storefronts
Section 08 44 00 - Glazed Curtain Walls
Section 08 44 33 - Slope Glazing Systems
Section 08 50 00 - Replacement Windows

1.03 Testing and Performance Requirements

A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93.

2. Thermal test unit sizes shall be 36" (914) x 60" (1524). Unit shall consist of a casement, fixed or projected window.
- B. Test Procedures and Performances
1. Windows shall conform to all AAMA/ ANSI/NWWDA-101 I.S.2-97 and AAMA 910-93 requirements for the window type referenced in 1.01.B.
 2. Air Infiltration Test - With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .10 cfm per foot of crack.
 3. Water Resistance Test - With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
 4. Uniform Load Deflection Test - With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.
 5. Condensation Resistance Test (crf) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (crf) shall not be less than 49.
 6. Thermal Transmittance Test (Conductive U-Value) - With ventilators closed and locked, test unit in accordance with NFRC-100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall not be more than 0.63
 7. AAMA Ratings
 - a. AW75 Series 7400 Operable and Fixed Windows Test Procedures: AAMA/WDMA/CSA 101/I.S.2/ A 440-08 - Laboratory performance testing.

AAMA 502-08 - Newly installed fenestration products.

AAMA 511-08 - Installed fenestration products after 6 months.

1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 window type.

1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

1.06 Warranties

- A. Total Window System
 1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.
 2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at his expense during the warranty period.

WINDOWS

Specifications

Operable and Fixed Windows

• Series 7400

SECTION 08 51 13 ALUMINUM WINDOWS

PART 2 PRODUCTS

2.01 Materials

- A. Aluminum - Extruded aluminum shall be 6063-T5 alloy and tempered.
- B. Hardware - Locking handles shall be cam type as supplied by U.S. Aluminum. Operating hardware shall be 4-bar stainless steel arms or equal.
- C. Weatherstrip - All weatherstrip shall be E.P.D.M. or equal.
- D. Thermal Barrier - All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions. The thermal barrier shall be INSULBAR® by ENSINGER, INC. or equal, consisting of two glass reinforced polyamide nylon 6/6 struts, mechanically crimped in raceways in exterior and interior extrusions. Poured and debridged urethane thermal barriers shall not be permitted.
- E. Glass
1. Insulating glass shall be () as manufactured by () consisting of () exterior, () air spacer, and () interior.
OR
 1. Glass shall be 3/16" (5) or 1/4" (6) monolithic tempered.

2.02 Fabrication

A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2).
2. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.

3. Depth of frame and vent shall not be less than 2-1/4" (57.2).
 4. All frame and vent members shall be able to accommodate separate interior and exterior finishes and colors.
- B. Frame - Frame components shall be mechanically fastened.
- C. Ventilator
1. All vent extrusions shall be tubular.
 2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
 3. Each vent shall be pressure equalized utilizing two rows of weatherstripping (or equal) installed in dovetail grooves in the extrusion.
 4. The vent shall present a flush appearance with the exterior and interior of the main frame when in the closed position.
- D. Muntins - Muntins shall be factory attached (non-removable), exterior grid designed to match vent sight line (if applicable).
- E. Screens
1. Screen frames shall be extruded.
 2. Screen mounting holes in the window frame shall be factory drilled.
 3. Screen mesh shall be aluminum or fiberglass.
- F. Glazing - All units shall be glazed with butyl tape, silicone cap seal, and extruded snap-in aluminum glazing bead, with E.P.D.M. gasket.
- G. Finish - Windows are capable of having separate interior and exterior finishes and/or colors.
1. Anodic
 - a. Finish all exposed areas of aluminum windows and components with electrolytically deposited color in accordance with Aluminum Association Designation AA-M10-C22-(). Color shall be (). Available colors are clear, bronze, and black.

2. Paint

- a. A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (*Specify a U.S. Aluminum standard color*).

PART 3 EXECUTION

3.01 Inspection

- A. Job Conditions - Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

3.02 Installation

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Plumb and align window faces in a single plane for each wall plane, and erect windows and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified windloads.
- C. Adjust windows for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

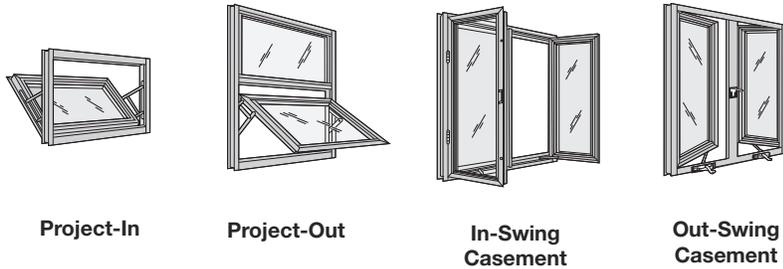
3.03 Protection and Cleaning

- A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

Special Features

Operable and Fixed Windows • Series 7400

The Series 7400 is a 2-1/4" (57.2) Operable Window tested to meet or exceed ANSI/AAMA/NWDA-1011.5 2-97 requirements. The 7400 Window is constructed using extruded tubular members mitered and crimped with corner keys. These windows are offered in projected, casement, and fixed configurations. Series 7400 also features the Insulbar® by Ensinger, Inc. Thermal Break design to provide maximum thermal properties.



Project-In

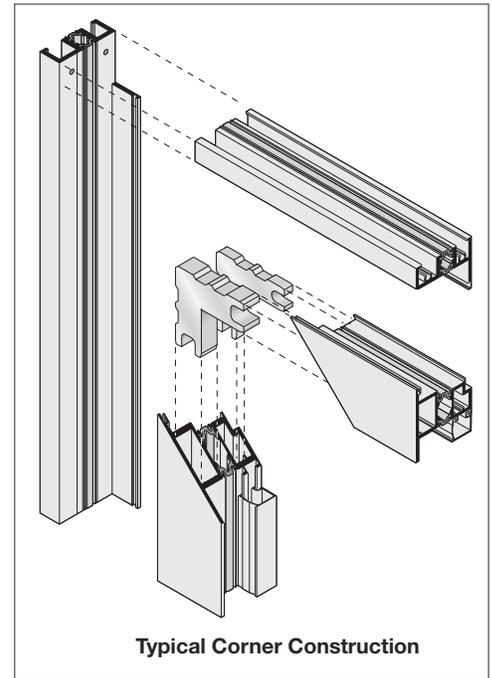
Project-Out

In-Swing Casement

Out-Swing Casement

Projected and casement windows operate by moving away, or "projecting," from the window frame, as awning or hopper vents, and as in-swinging or out-swinging casement vents. Projected windows open and close horizontally while casement windows operate on a vertical axis.

Insulbar® is a registered trademark of Ensinger, Inc.

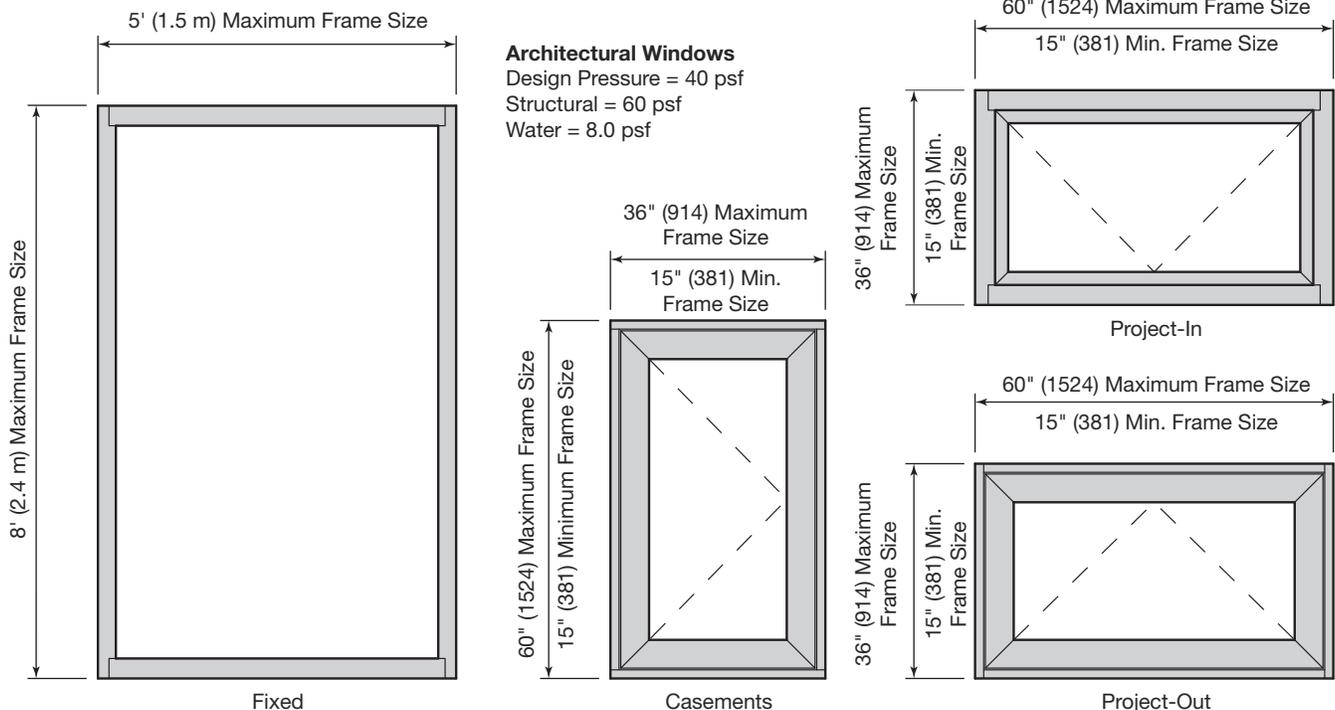


Typical Corner Construction

Glass Size Formulas

Size Limitations

Glass Sizes for Single Operable Units = Frame Size Minus 6" (152.4) Vertically and Horizontally.
 Glass Sizes for Single Fixed Units = Frame Size Minus 2-5/8" (66.7) Vertically and Horizontally.
 Glass Sizes for All Multi-Light Units = DLO plus 1" (25.4) Vertically and Horizontally (Good for Any Series 7400 Glass Sizing)



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Hardware

Operable Windows

- Series 7400

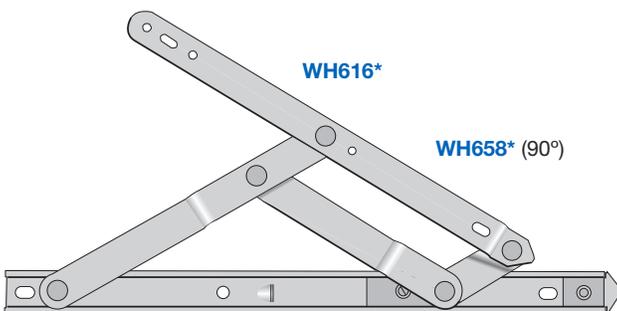
* Must specify window size when ordering.

HARDWARE	PART NO.	DESCRIPTION	PKG QTY.	PROJECT-IN VENT	PROJECT-OUT VENT	IN-SWING CASEMENT	OUT-SWING CASEMENT
OPERATING HARDWARE	WH616*	Stainless Steel 4-Bar Hinges	1	●	●	●	●
	WH658*	Stainless Steel 90° 4-Bar Hinges	1			○	○
	WH748	5 Knuckle Butt Hinges	1			○	○
	WH656	High Performance Concealed Casement Hinge	1			○	○
	WH300*	Roto Operators	1		○		○
	WH645	Limit Device	1	○	○	○	○
	WH646	Friction Adjuster	1	○	○	○	○
LOCKING HARDWARE	WH240	Cam Handle Lock	1	●	●	●	○
	WH412	Lift Handle Lock	1		○		●
	WH023	Access Control Key Lock	1	○	○	○	○
	WH124*	Multi-Point Locking System	1				○

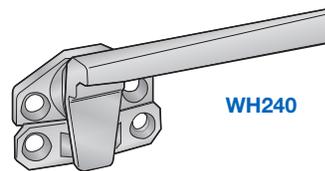
● **STANDARD** Standard Finish Supplied on Roto Operator, Cam Handle, and Lever Handle Hardware is White Bronze Unless Specified Otherwise.

○ **OPTIONAL** Consult Factory for Other Hardware Types and Finishes to Meet Project Requirements.

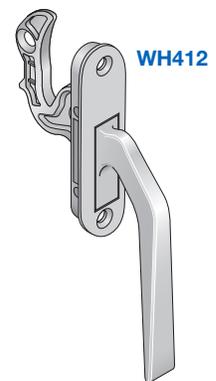
NOTE: Roto Operators Require Butt Hinges.
Butt Hinges Without Roto Operator Requires Friction Hold Open Hardware.



Stainless Steel 4-Bar Hinge



Cam Handle Lock



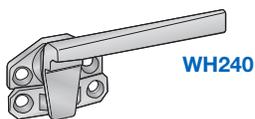
Lift Handle Lock

See page 06-D2 for additional information on Window Hardware

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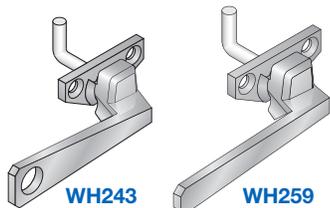
Hardware

* Must specify window size when ordering.



WH240

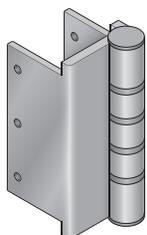
Cam Handle Lock (project-out windows) This lock is designed to have a long, trouble free life. The two-piece strike includes a polyester insert for smooth operation. Pole Operated Handle available for elevated window locations.



WH243

WH259

Cam Handle Locks (project-in windows) This concealed pawl design provides internal lock-up of in-swinging windows. **WH243** with optional Pole Operated Handle for elevated window locations.



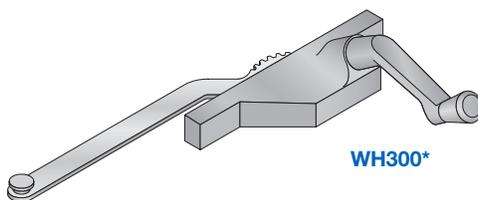
WH748

5 Knuckle Butt Hinge
This is a heavy-duty butt hinge for use with casement window applications.



WH412

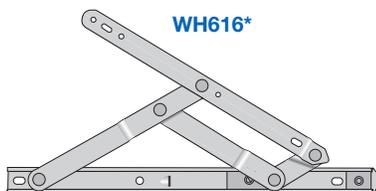
Lift Handle Lock
This locking handle is designed with a slight taper to it's nose to help improve keeper engagement, and to produce a smoother locking action. A strong detent in both open and closed positions creates a solid and secure feel. These cam handles are rear mounted with no exposed screws.



WH300*

Single Arm Roto Operator

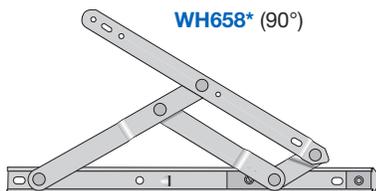
This operator provides arm movement for 90° of the window opening. The operator has a high pressure, die cast zinc crank handle and knob, and hardened steel worm gear and gear arm. Butt hinges must be used with this operator.



WH616*

Stainless Steel 4-Bar Hinges

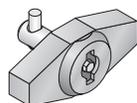
These non-handed 4-bar hinges are specially designed for casement, awning and projected vents. This hinge has a stainless steel support arm, guide bracket and cap, and sliding brass shoe.



WH658* (90°)

Stainless Steel 90° 4-Bar Hinge

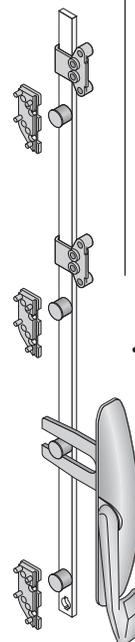
Hinges are designed for casement window applications and provide 90° of opening. When in the fully opened position, an average sized person can escape through the opening in case of an emergency as required by egress codes.



WH023

Tamper Resistant Key Lock

This spring-loaded lock design provides tamper-resistant lock-up of windows. A key slot in the housing requires a special key to operate the lock.



WH124*

Multi-Point Locking System

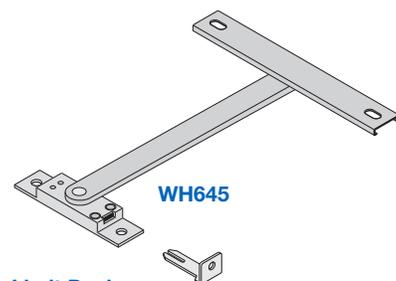
This lock has self-locating snap-on tie bar guides with "feet" protruding from within, that automatically index the tie bar the correct distance from the frame. The progressive locking action guarantees positive sequential locking of window.



WH646

Friction Adjuster

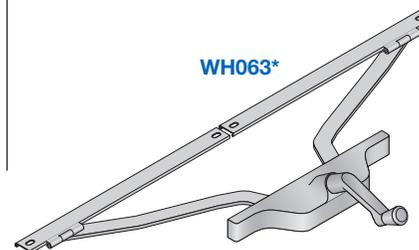
By tightening a screw in the sliding brass shoe, an operator can easily adjust the tension required to open and close the window. This friction adjuster is made of stainless steel with nylon friction block encased in a sliding brass shoe.



WH645

Limit Device

Limit devices help prevent damage to casement and awning windows under high winds in high rise applications. Limit devices are plated steel arms with stainless steel track and detach clip.



WH063*

Pivot Shoe Roto Operator

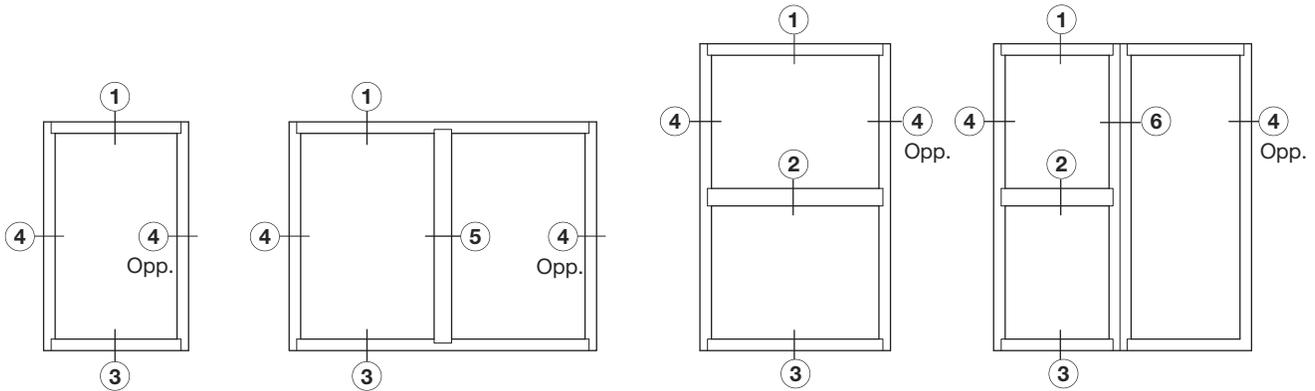
Designed for face mounted applications on single vent awning windows, this operator's unique pivot shoe design allows approximately 10" (254) of opening. Acetal pivot shoes slide smoothly in the track assuring positive operation and creating a self cleaning action.

WINDOWS

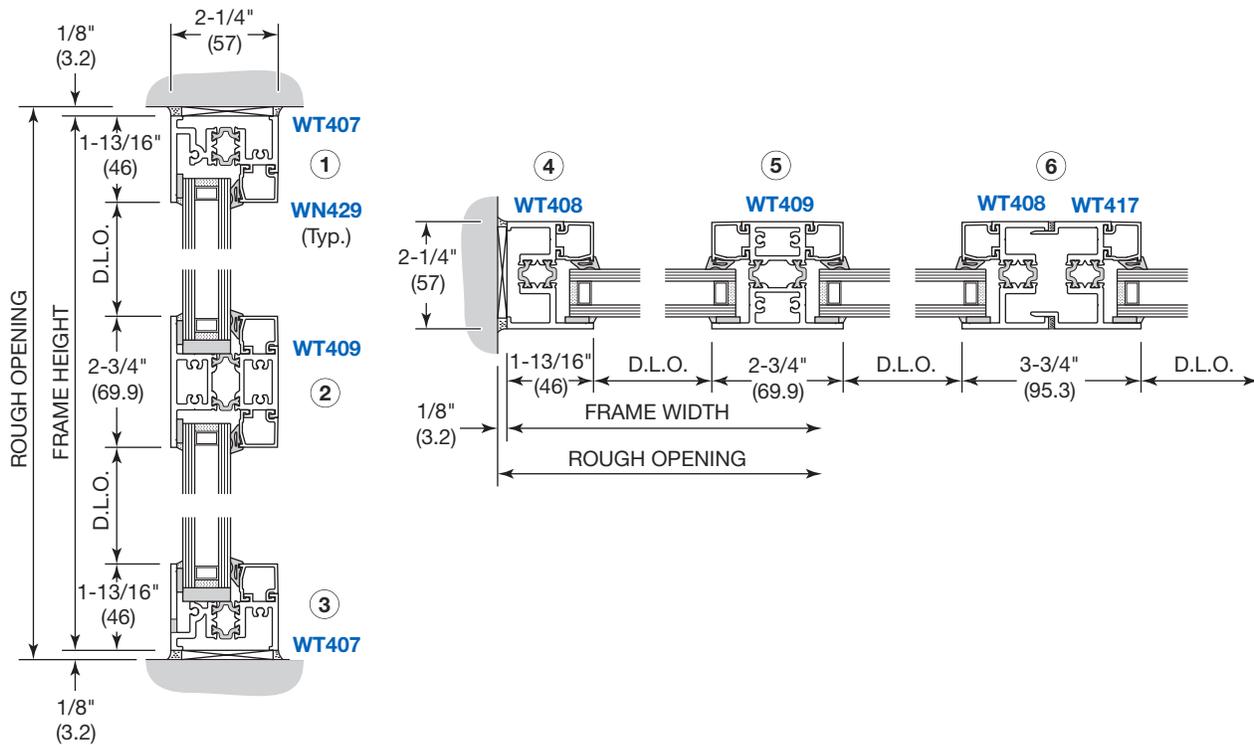
Typical Details

Fixed Windows • Series 7400

FOR 1" (25) GLAZING



FIXED WINDOW
TYPICAL ELEVATIONS



NOT TO SCALE

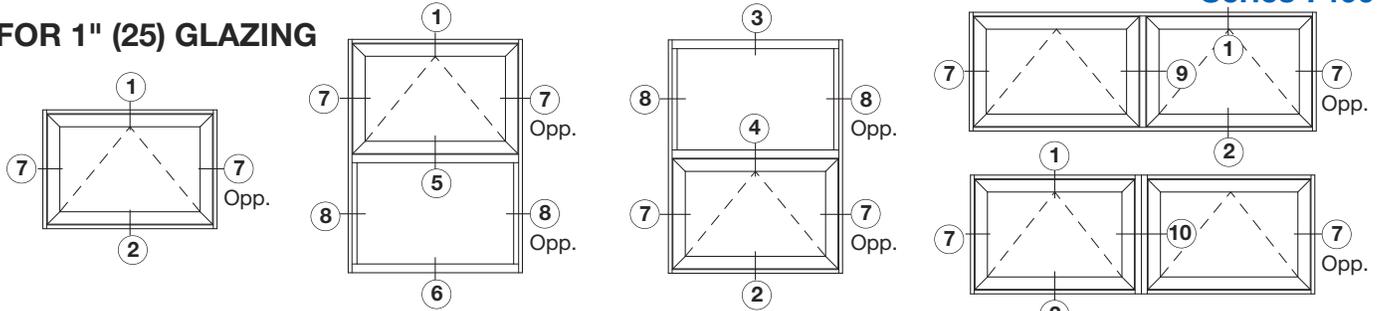
WINDOWS

Typical Details

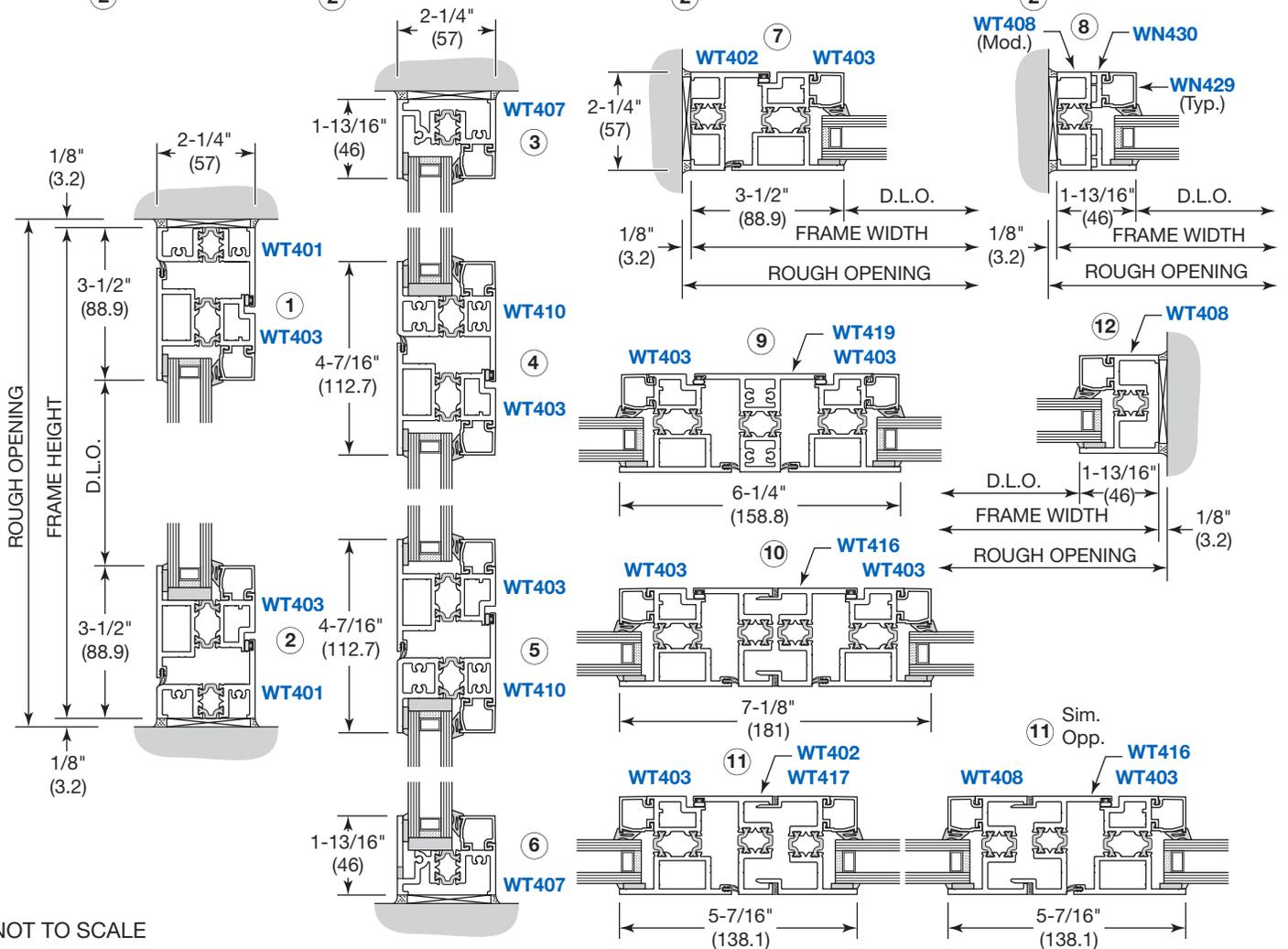
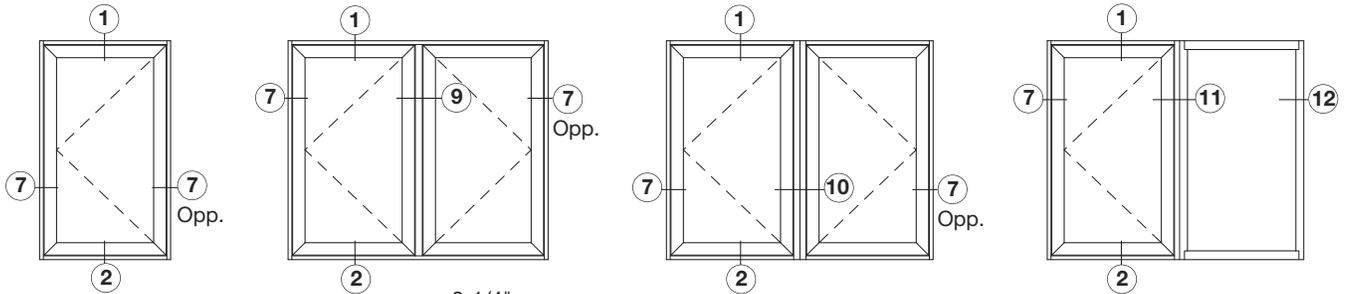
PROJECT-OUT

Operable Windows • Series 7400

FOR 1" (25) GLAZING



OUT-SWING CASEMENT



NOT TO SCALE

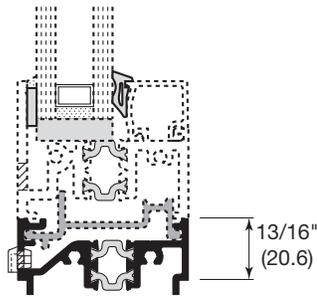
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Optional Accessories

Operable Windows

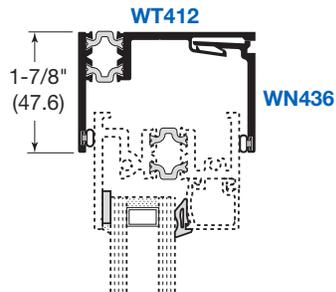
- Series 7400

FOR 1" (25) GLAZING

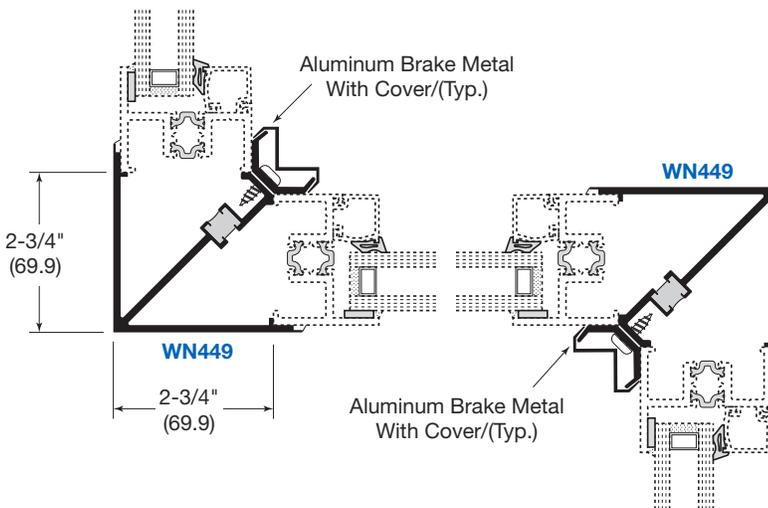
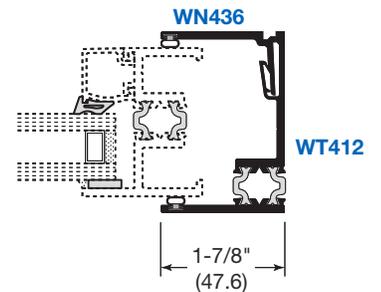


WT414

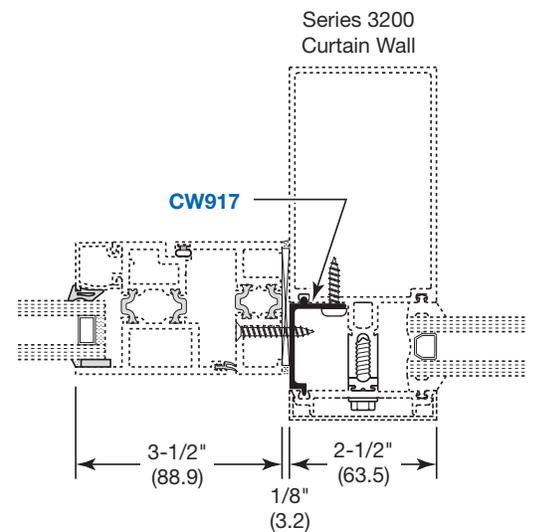
Starter Sills



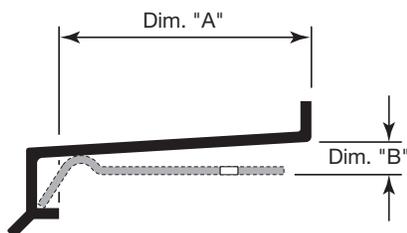
Compensation Channels



Corner Adaptors



Curtain Wall Adaptor



Extruded Sill Flashings

PART NO.	DIM. "A"	DIM. "B"	LENGTH
WN442	2-3/4" (69.9)	3/8" (9.5)	24' (7.3 m)
WN443	3-1/4" (82.6)	13/32" (10.3)	24' (7.3 m)
WN444	3-3/4" (95.3)	7/16" (11.1)	24' (7.3 m)
WN445	4-1/4" (108)	15/32" (11.8)	24' (7.3 m)
WN446	4-3/4" (120.7)	1/2" (12.7)	24' (7.3 m)
WN447	5-1/4" (133.4)	17/32" (13.5)	24' (7.3 m)
WN448	6-7/32" (158)	19/32" (15.1)	24' (7.3 m)

WINDOWS

Accessories

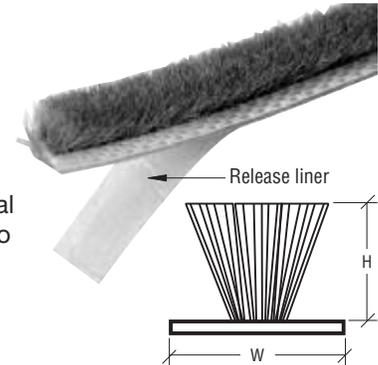
ADHESIVE-BACKED WINDO-PILE

- Reduces Heat and Energy Loss Around Windows and Doors
- Adhesive Backing Allows Press-On Installation
- Seals Effectively Without Affecting Operation



Effectively seals vertical hung and horizontal sliding windows. Simply press Windo-Pile into the window sash channels. Doesn't interfere with normal window operation.

Weatherstripping

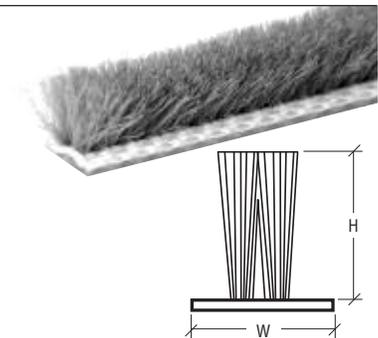


PART NO.	PILE HEIGHT (H)	BACK WIDTH (W)	ROLL LENGTH
A71320C	.200 (5)	.270 (6.8)	100' (30.5 m)
A71320B	.200 (5)	.270 (6.8)	700' (213.3 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

WINDO-PILE

- Replaces Old or Worn-Out Pile Weatherstripping in Doors or Windows
- Water-Resistant Woven Pile is Unaffected by Adverse Weather
- Quick and Simple Installation
- Available in Two Pile Densities: Medium and High



MEDIUM DENSITY WINDO-PILE BACK WIDTH .187 (4.7)

100 FOOT ROLL PART NO.	PILE HEIGHT (H)	BULK ROLL PART NO.	BULK ROLL LENGTH
A11320C	.200 (5)	A11320B	1100' (335.3 m)
A11325C	.250 (6.3)	A11325B	900' (274.3 m)
A11330C	.300 (7.6)	A11330B	700' (213.4 m)
A11335C	.350 (8.9)	A11335B	600' (182.9 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

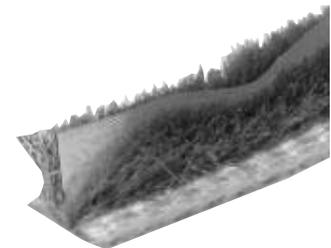
HIGH DENSITY WINDO-PILE BACK WIDTH .270 (6.8)

100 FOOT ROLL PART NO.	PILE HEIGHT (H)	BULK ROLL PART NO.	BULK ROLL LENGTH
A11420C	.200 (5)	A11420B	800' (243.8 m)
A11425C	.250 (6.3)	A11425B	600' (182.9 m)
A11430C	.300 (7.6)	A11430B	400' (121.9 m)
A11435C	.350 (8.9)	A11435B	400' (121.9 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

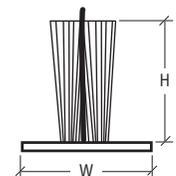
FINNED WEATHERSTRIP

- Unique Center Fin Stops Air, Water, and Dust From Infiltrating Joints Around Windows and Doors
- Made to Replace Most Existing Pile Weatherstrips
- Resists Mold, Mildew, and Corrosion



PART NO.	PILE HEIGHT (H)	BACK WIDTH (W)	ROLL LENGTH
FS7716C	.160 (4)	.187 (4.7)	100' (30.5 m)
FS77163M	.160 (4)	.187 (4.7)	3000' (914.4 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.



WINDOWS

Stain Removers

Accessories

BIO-CLEAN WATER STAIN REMOVER

- Effectively Removes Water and Mineral Stains, Rust, Tree Sap, Paint Overspray, Soap Scum, and Mildew From Glass and Other Surfaces
- Works Great On: Windows, Glass Surfaces, Tile, Fiberglass, Chrome, Anodized Brass and Aluminum, and Stainless Steel



Bio-Clean is a professional strength cleaner recommended by both glazing contractors and professional window cleaning companies. **NOTE:** Do not use on surfaces that can be harmed by the use of a mild abrasive.

•Removes Stage One Corrosion Quickly

Stage One Corrosion is defined as glass with light corrosion, and little or no damage to the glass. Stage Two Corrosion occurs when the deposits are no longer on the surface of the glass, but have started to break down the molecular structure of the glass, leaving an etched or white haze on the glass after the stain has been removed. CRL Bio-Clean Water Stain Remover will not repair glass with Stage Two Corrosion.

PART NO.	CONTENTS	QTY/CASE
WSR1	16 Fl. Oz. (473 ml)	12
WSR1P	5 Pouches	1

Minimum order: 1 each of WSR1 and 1 pack of WSR1P.

WATER SPOT REMOVER

- Solves the Problem of Water Spotting From Sprinklers, Hard Water Sources, and Exposure to Acid Rain
- Removes Alkaline Residue, Chemical and Mineral Deposits From Uncoated Clear and Float Glass Surfaces (Typical Stage One Corrosion)



PART NO.	CONTENTS	QTY/CASE
C2020	1 Gallon (3.785 l)	4
C2030	1 Quart (946 ml)	12

Minimum order: 1 each.

Water Spot Remover is specifically formulated for use by professional window cleaning contractors and glazing professionals. It is designed to remove any residue left on glass which may alter the optical clarity, and cannot be cleaned using standard methods.

"SPARKLE" CLEANER AND STAIN REMOVER

- Cleans Light Water Stains From Glass Caused by Weather, Sea Air, and Pollution
- A Longtime Favorite

PART NO.	CONTENTS	QTY/CASE
SP101	8 Fl. Oz. (236 ml)	12

Minimum order: 1 each.

"Sparkle" Cleaner does those glass cleaning jobs too tough for spray-on cleaners. It removes light water spots and stains in glass caused by weather, sea air, or pollution. Wipe on with a damp cloth or paper towel, rub stained areas, then wipe off.



A-MAZ WATER STAIN REMOVER

- Removes the Toughest Stains
- Contains No Acids, Bleach, or Chlorides
- Includes Nylon Scrub Pad



A-Maz Water Stain Remover removes the toughest stains on glass, chrome, porcelain, fiberglass, metal, tile - water stains, mineral deposits, and sealant stains.

PART NO.	CONTENTS	QTY/CASE
3379520	14 Fl. Oz. (396 ml)	6

Minimum order: 1 each.

WINDOWS

Cleaning Products and Supplies

One of our fastest growing product lines has been our Cleaning Products. We have always specialized in glass cleaning products with the industry favorite being our 1973 Glass Cleaner. And because of our alliance with Sprayway, we are able to offer you even more high quality glass cleaning products, as well as other specialty products for all types of cleaning needs. Available in aerosol and liquid forms, they tackle your toughest applications from cleaning glass, plastics, and metal, to removing graffiti, greases, oils, sealants, adhesives, and even cleaning your hands.



Glass Cleaners

- Ammoniated Aerosol Formulas
- Non-Ammoniated Aerosol Formulas
- Private and Logo Labels
- Glass Washing Machine Detergents



Concentrated Glass Cleaners, Stain Removers, and Protectants

- Concentrated Liquid Glass Cleaner
- Ready-Mix Glass and Mirror Cleaners
- Stain Removers
- Surface Protectants



Plastic Cleaners

- Aerosol Plastic Cleaners
- Liquid Plastic Cleaners



All Purpose Cleaners

- Multi-Surface Cleaners
- Stone Countertop Cleaners
- Anti-Fog Spray and Dust Remover
- Solvent Adhesive Removers and Cleaners



Metal and General Purpose Cleaners

- Stainless Steel Polish and Cleaners
- Armor All® Protectant
- Metal Cleaners
- Rust Treatment



Wipes, Towels, and Rags

- Lint Free Shop Wipes
- Scott Paper Towel Rolls
- Kimberly-Clark® Towels
- Micro-Fiber Wipes
- Box of Rags



Hand Cleaners

- Organic Formula
- Orange Formula With Grit
- Wipes in a Bucket With Urethane and Grease Removers



Cleaning Accessories

- Razor Blades and Scrapers
- Coveralls and Shoe Covers
- Steel Wool and Scotch Brite® Pads
- Vehicle Interior Protection



Window Washing Tools

- Squeegees
- Extension Poles
- Window Cleaning Soaps

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 Online crlaurence.com By Phone (800) 421-6144