

Series 4503

Lift and Slide Balcony Door

STARLINE
WINDOWS



Quality, Comfort & Peace of Mind

Foreword

This Design Guide provides design guidelines, manufacturing capabilities and specifications on the Series 4503 lift and slide balcony door with thermally broken aluminum frames.

This document is intended to provide information on our standard products. Non-standard designs and applications can be reviewed to determine the feasibility on a project-specific basis.

Please email any project specific enquiries to technical@starlinewindows.com or architectural@starlinewindows.com.

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Recommended Size Guidelines

Starline Windows provides the following minimum and maximum guidelines for door module area and weight for new construction and restoration projects.

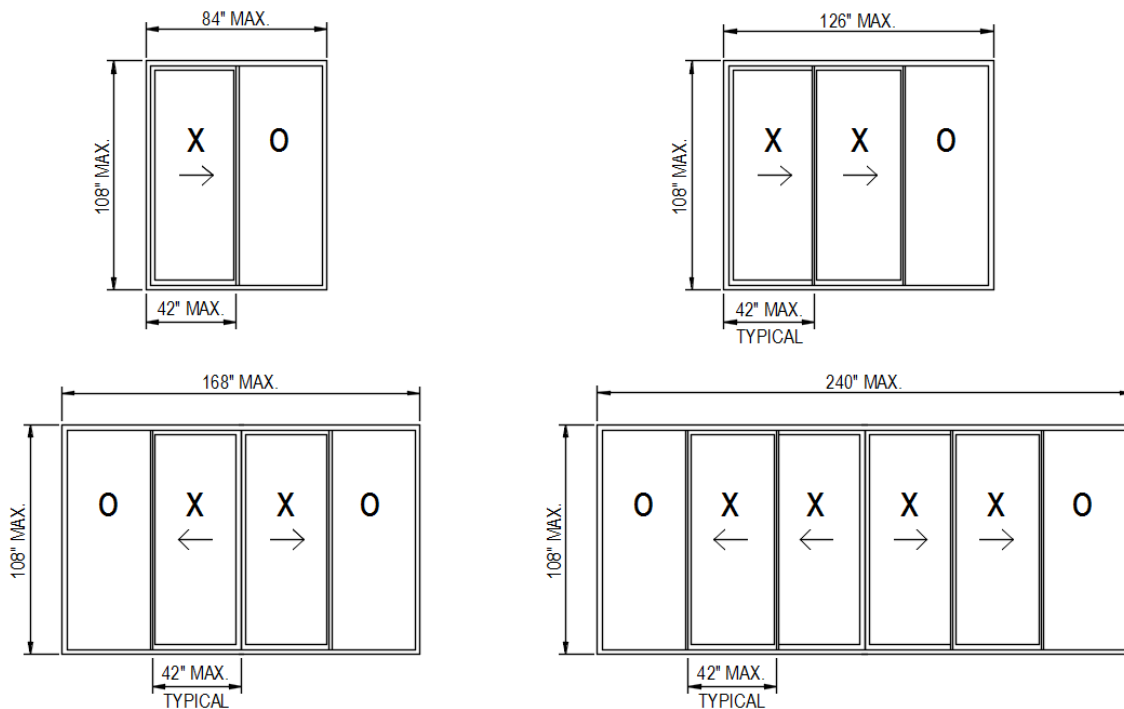
The 4503 Lift and Slide Balcony Door is available in either an interior or exterior slider. Unless specifically stated, the information contain in this document applies to both the interior and exterior slider.

Lift and Slide Door Limitations

SLIDER CONFIGURATION	XO, OX	OXXO	XXO ¹ , OXX ¹	OXXXXO ¹	
FRAME DEPTH	4.5"		7"		
COUPLES TO WINDOW WALL	Yes		No – Standalone only		
TRANSOM ² AVAILABLE	Yes	No		No	
HEEL DIMENSION HEIGHT	Min. = 60" Max. = 108"				
SLIDER WIDTH	Min. = 30" Max. = 42"				
HEEL DIMENSION WIDTH	Min. = 60" Max. = 84"	Min. = 120" up to 144"	Max. 168" >144" - 168"	Min. = 90" Max. = 126"	Min. = 180" Max. = 240"
DEFLECTION ALLOWANCE	+/- 3/4"	+/- 1/2"	1/8" Max.	1/8" Max.	+/- 3/4"

¹ XXO, OXX and OXXXXO configurations require their own rough opening.

² Transoms are available for the interior slider in an XO or OX configuration only. The transom is available in a flush aluminum metal panel or spandrel glass. Vision glass is not available.



Note:

- Limitations are guidelines and depend on site conditions.
- Horizontal coupling is not available.

Radius Door and Radius Door Transom

Starline Windows does not offer radius lift and slide doors or radius transoms.

Crippled Mullions

Starline cannot manufacture windows and doors with crippled mullions/couplers. All vertical mullions/couplers and horizontal mullions within a window or door module must run full height and width of the window or door module.

VERTICAL COUPLER MUST RUN THE FULL HEIGHT
AS SHOWN IN IMAGE ON THE RIGHT



FIXED WINDOW COUPLED TO A SLIDING DOOR

Note: Transoms are available for the interior slider in an XO or OX configuration only. The transom is available in a flush aluminum metal panel or spandrel glass. Vision glass is not available.

Hardware Options

The Series 4503 Lift and Slide Balcony Door has a sliding door has an interior handle made from die-cast aluminum. The interior handle is a multi-point locking handle that positively engages with an adjustable keeper at the frame jamb. The exterior handle is a raised pull tab made from made of high impact polycarbonate¹. Interior handle is available in black, white and silver. The exterior handle is available in black or white.

The sliding panel slides on an adjustable ball bearing wheels.

Foot locks are not available.

Insect Screens are not available through Starline Windows. A retractable screen (such as Mirage or Phantom) can be installed to the structure after the door installation and Building Envelope is complete. This screen cannot be purchased from Starline however it can be purchased from a third -arty supplier.

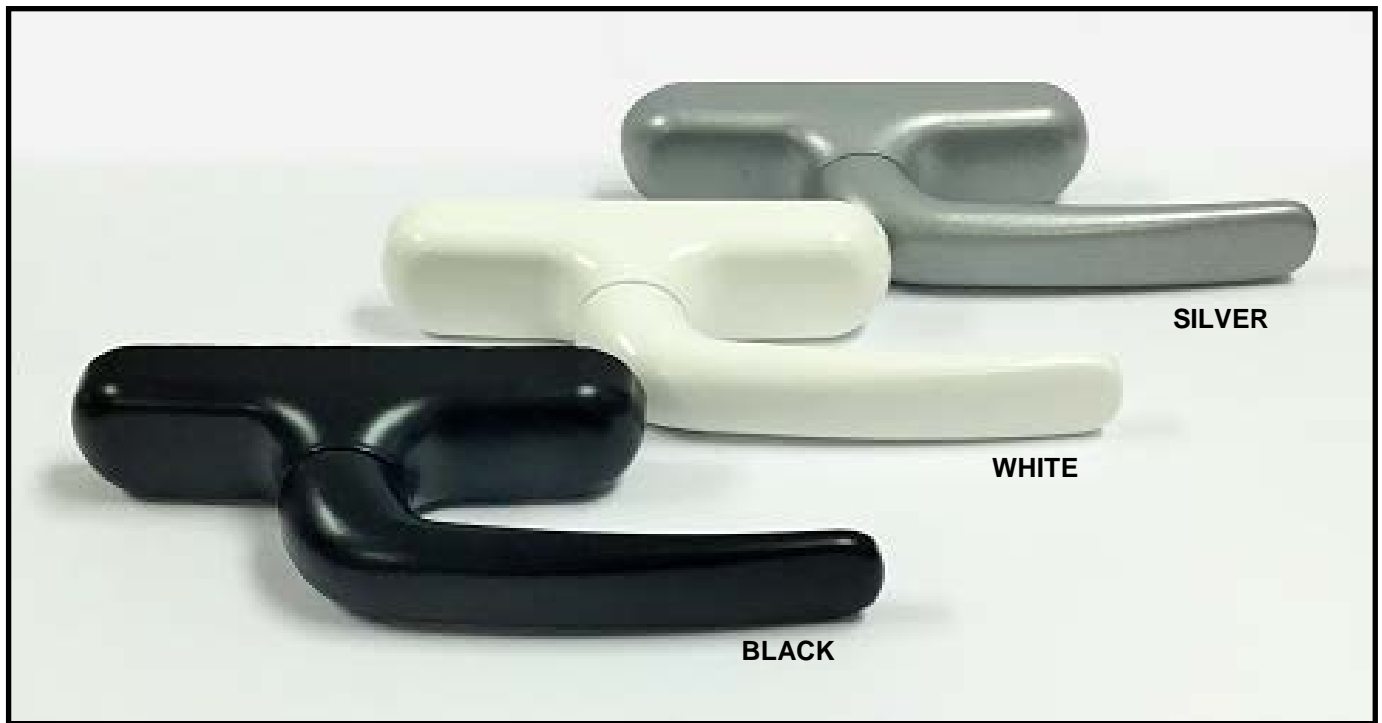
Refer to the Series 4503 Lift & Slide Balcony Door – Hardware Options document in the Miscellaneous section of the catalogue for images.

¹ If a reinforced sash is used, there is no exterior handle as the frame profile for a reinforced sash provides a place to grip to allow you to open and close the door. See the next page for an image.

Standard Interior Handle

The Universal PRIMA cremone handle is a multi-point locking interior handle that positively engages with an adjustable keeper at the frame jamb.

- Die-cast aluminum handle.
- Available in black, white and silver.



High Profile Exterior Handle¹

The high profile exterior handle is raised 0.618”.

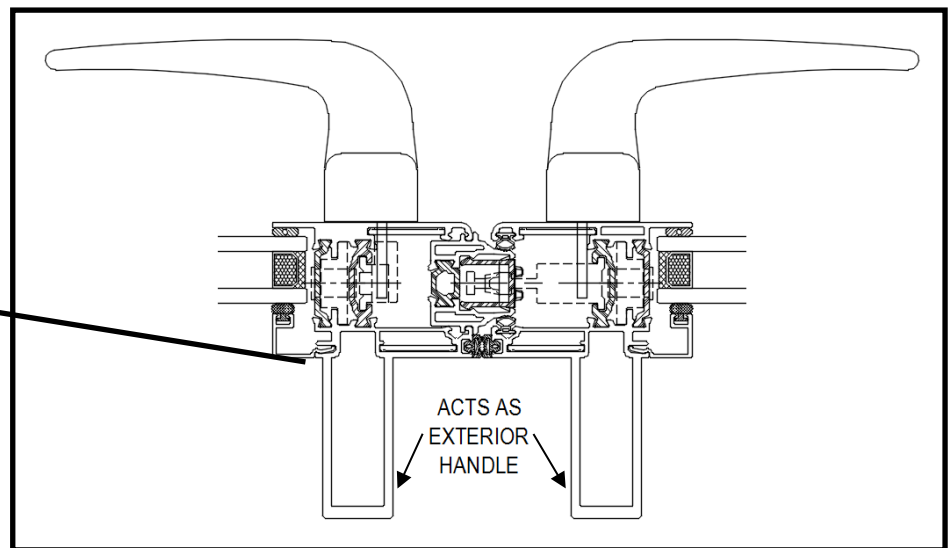
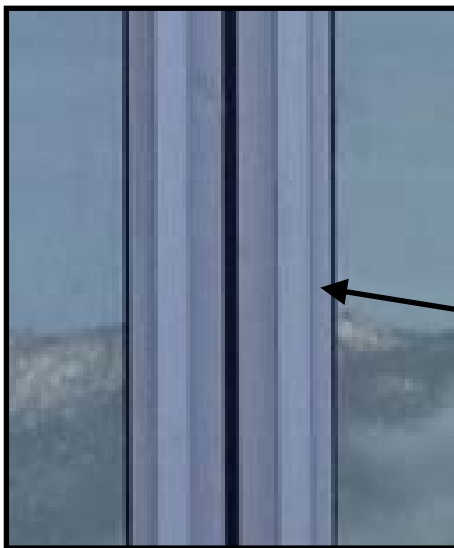
Molded in high-impact polycarbonate.

Available in black and white.



¹If a reinforced sash is used there is no exterior handle as the frame profile for a reinforced sash provides a place to grip to allow you to open and close the door. See below for further clarity.

Exterior Reinforced Sash Which Acts as an Exterior Handle

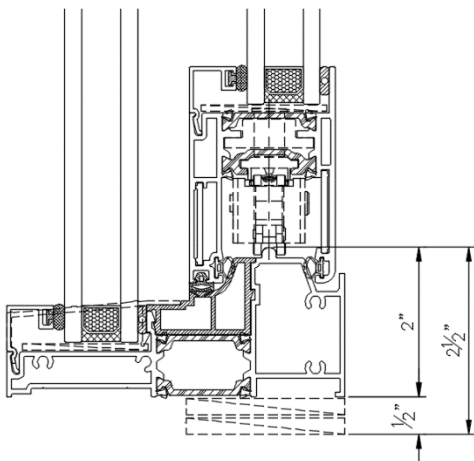


Threshold Heights

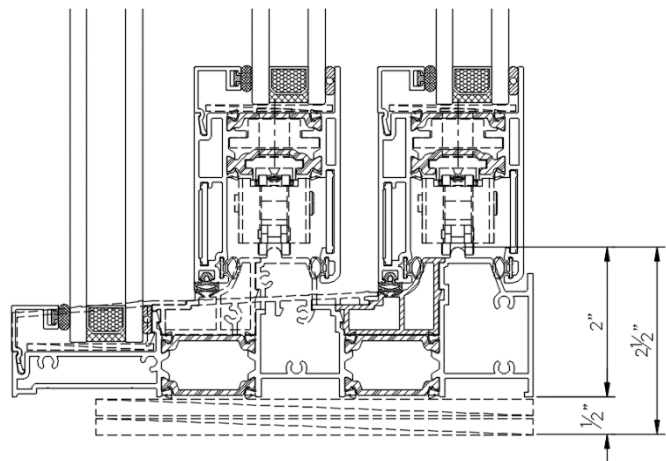
When detailing curb heights on a project; be mindful that the overall curb height does not exceed the maximum height / allowable step by the building code.

For example, as per the BC Building code, the maximum step allowed is 8" (200mm). In this case, for any of the thresholds for the 4503, a 6" (150mm) tall curb would be too tall, as the threshold height plus 6" (150mm) would exceed the maximum allowable step of 8" (200mm) as per code.

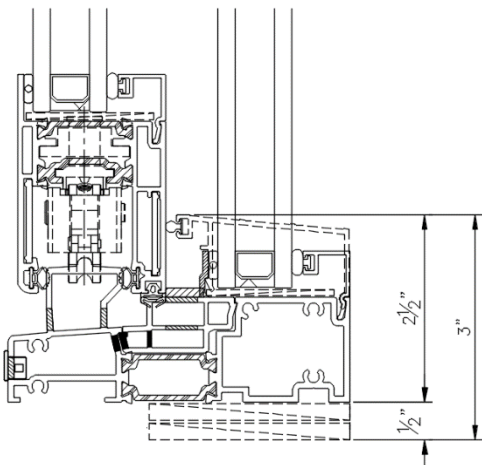
Note: The threshold heights vary depending if an interior or exterior slider is used. The threshold height for the exterior slider also varies if the 4 1/2" or 7" track is used. The OX, XO and OXXO configurations use the 4 1/2" track, and the XXO, OXX and OXXXXO configurations use the 7" track.



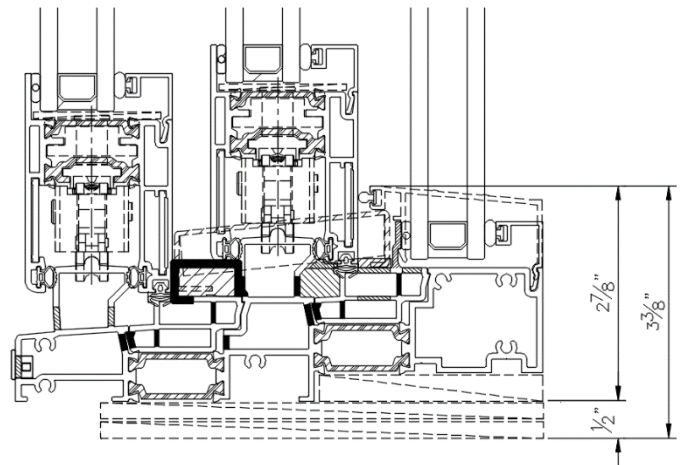
INTERIOR SLIDER - 4 1/2" FRAME DEPTH



INTERIOR SLIDER - 7" FRAME DEPTH



EXTERIOR SLIDER - 4 1/2" FRAME DEPTH

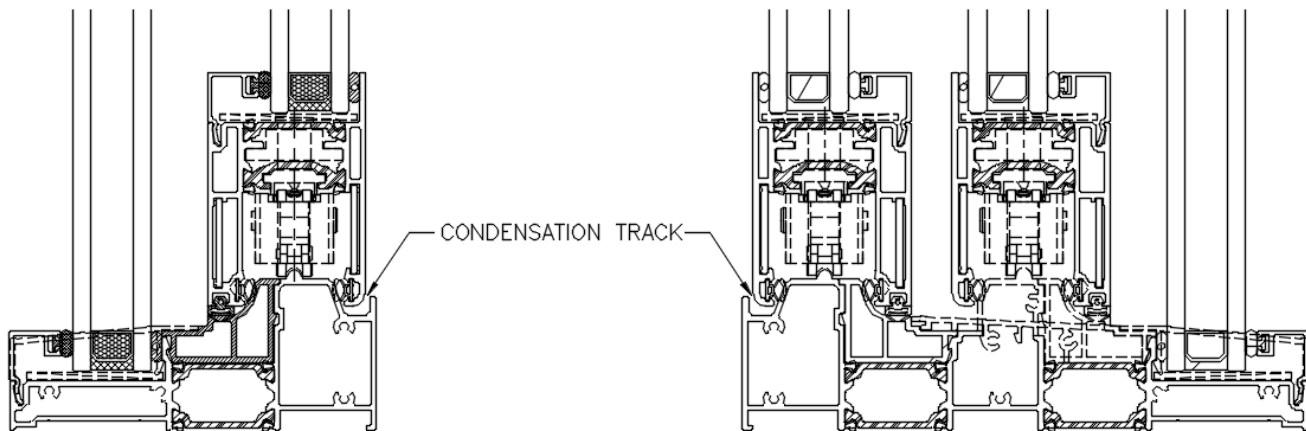


EXTERIOR SLIDER - 7" FRAME DEPTH

Incidental Water Ingress Control

The 4503 Lift and Slide Balcony Door is designed with a condensation track to contain any incidental water ingress, should it occur. This design feature is included for both the 4 ½" and 7" frame depths.

The door system has been tested to, and is compliant with, the AAMA/WDMA/CSA 101 I.S.2/A440-11 and CSA A440SI-09 standards¹. These standards require water penetration resistance lab test to be performed in accordance with ASTM E547 and ASTM E331. However, it is important to note that some condensation or incidental water ingress may occur under high humidity or severe weather events. To contain this incidental moisture, the system is designed with a condensation track which will store and manage any moisture until it is dried out



¹ Albeit that the door system has been tested to, and is compliant with, the AAMA/WDMA/CSA 101 I.S.2/A440-11 and CSA A440SI-09 standards, this is for a specific door size and configuration. For project specific door configurations that do not fall under the approved lab tested size and configuration, water field tests can be performed, if requested by Consultant, to verify water penetration resistance compliance.

Insulation

The standard Series 4503 insulation is as follows:

R-Matte plus 3 rigid foam plastic insulation, or equivalent, is the standard insulation for aluminum and galvanized steel sandwich panel applications. The overall insulation thickness for sandwich panel is ¾". R-Matte insulation is available for transom and fixed panel only.

Rockwool Fabrock 30 and / or Rockwool Fabrock LT mineral wool fibre insulation, or equivalent, with an overall thickness of 3" for spandrel glass, aluminum panel and galvanized panel application. The R-value/inch @ 75°F is 4.1 hr.ft².F/Btu.

Starline does not provide spandrel glass with a metal back pan for the 4503 lift and slide door. If spandrel glass is required, the spandrel glass will need to be part of an insulated glass unit.

The insulation will be installed as follows:

- The deflection header clip, seismic jambs and couplers will be insulated onsite.
- The corner posts (except seismic pocket), jambs, head and transoms will be insulated in the factory.
- The sill cannot be insulated due to wicking concerns.

Finishes (Powder Coating)

Starline uses a thermoset coating specifically designed for architectural systems. This coating complies with the American Architectural Manufacturers Association (AAMA) 2603 specification standard which covers pigmented organic coatings on aluminum extrusions.

There are options to upgrade the powder to meet the AAMA 2604 or AAMA 2605 specification on the exterior which is noted in the **Options** section below.

Options

There is an option to upgrade the powder coating to meet a the following AAMA standards:

- A thermoset super durable coating which complies with the AAMA 2604 specification standards. The AAMA 2604 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 specification standard.
- A thermoset fluorocarbon coating which is a superior coating that complies with the AAMA 2605 specification standard. The AAMA 2605 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 and AAMA 2604 specification standards.

Note: AAMA 2604 or AAMA 2605 specification standard on exterior of frames may be required in some building codes, bylaws, jurisdictions, etc.

Semi-standard colours are available.

Custom colours may be available on a project-specific basis.

Dual frame colour is available.

Items listed in this **Options** section are available at an additional cost.

Color Options

The following **standard colours** are available in AAMA 2603, AAMA 2604 and AAMA 2605 specification standards:

White Black Brown Silver¹ Charcoal Grey

¹Silver is available for an additional cost.

The following **semi-standard colours** are available in AAMA 2603, AAMA 2604 and AAMA 2605 specification standards:

Graphite Grey Grey Velvet Iron Mountain Grey Metal Shavings Grey Beige
Kendall Charcoal Black Charcoal

Note: Semi-standard colours are available for an additional cost and may require up to a 4-week lead time.

Custom colours are also available. Virtually any colour can be matched or very closely matched. The scope of work and overall custom colour quantity will be reviewed by Starline on a project specific basis to determine the feasibility of the custom colour request.

Note: Custom colours are available for an additional cost premium. An approximate 12-week lead time is required to procure custom colour requests.

Refer to the **Aluminum Finishes (Powder Coating)** document in the Miscellaneous section of the catalogue for images of the standard and semi-standard colours available, a comparison of some attributes which are tested for in the AAMA 2603, AAMA 2604 and AAMA 2605 specification standards, information on colour retention, and details to consider when selecting colours.

Glazing

Starline Windows standard insulated glass unit (IGU) will be comprised of the following glass make-up:

- Double glazed, double sealed IGU with an overall nominal thickness of 1" (25 mm).
- Standard high performance soft coat (sputtered) Low E which is applied to surface #2.
- Black warm edge spacer with air fill.
- Minimum glass thickness is 4mm and is tempered.

Option

There is an option to upgrade to a triple glazed IGU, which will provide enhanced energy performance. The triple glazed IGU will be comprised of the following glass make-up:

- Triple glazing, double seal insulated glass unit with an overall thickness of 1 7/16" (37 mm).
- Standard high performance soft coat (sputtered) Low E which is applied to surface #2.
- Black warm edge spacer with air fill.
- Minimum glass thickness is 4mm and is tempered.

Additional options are available for an additional cost.

SSG / Butt Glazing

Starline does not currently offer SSG (structural silicone glazed) or butt-glazed patio doors.

Maximum Area of IGU

GLASS TYPE	SINGLE LITE	DOUBLE GLAZED			TRIPLE GLAZED		
	6mm	4mm	5mm	6mm & THICKER	4mm	5mm	6mm & THICKER
Annealed	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	30 sq.ft.	35 sq.ft.	35 sq.ft.
Tempered	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	30 sq.ft.	35 sq.ft.	35 sq.ft.
Laminated	–	–	–	28 sq.ft.	–	–	28 sq.ft. ¹
Spandrel	40 sq.ft.	–	–	–	–	–	–
Spandrel IGU ²	–	30 sq.ft.	40 sq.ft.	40 sq.ft.	–	–	–

¹ 6mm laminated glass can be to a max area of 28 sq.ft. 8mm Laminated and thicker can be to a max area of 35 sq.ft.

² The Spandrel glass lite is always minimum 6mm thick. In spandrel IGU the other glass lite can be 4mm or thicker.

Aspect Ratio of Glass

The maximum width to height ratio is 5:1 for any glass selected, less single lite spandrel glass which is 8:1.

Refer to the **Aluminum Glass & IGU Design Guidelines** document in the Miscellaneous section of the catalogue for more detailed information regarding size limitations, available configurations, defects and definitions.

IGU Charts

Double Glazed

Based on a 25mm IGU

Overall thickness of primary seal (Butyl): 0.8mm

EXTERIOR		SPACER		INTERIOR	
mm	inch	mm	inch	mm	inch
5	3/16	15.6	5/8	5	3/16
6	1/4	15.6	5/8	4	5/32
6	1/4	15.6	5/8	5	3/16
6	1/4	12.6	1/2	6	1/4
6LAM .030	1/4 .030	12.6	1/2	6	1/4
6LAM .030	1/4 .030	11.6	7/16	6LAM .030	5/32

Triple Glazed

Based on a 37 mm IGU

Overall thickness of primary seal (Butyl): 0.8mm

EXTERIOR		SPACER		CENTRE		SPACER		INTERIOR	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
4	5/32	12.6	1/2	4	5/32	12.6	1/2	4	5/32
4	5/32	12.6	1/2	4	5/32	11.6	7/16	5	3/16
6	1/4	11.6	7/16	5	5/32	11.6	7/16	6	1/4

Note:

- The IGU, glass thickness, and spacer bar size are based on nominal dimension. Actual dimensions will vary.
- There are other glass make-up combinations available other than noted in the above chart. The chart's purpose is to provide a few examples.

Acoustical Ratings

Double Glazed

GLASS EXT.	GAP	GLASS INT.	TEST NUMBER	STC	OITC
6mm Temp.	16mm	4mm Temp.	TL6332	35	28
4mm Temp.	16mm	6mm Lam. (PVB 0.8mm)	TL6331	36	29
6mm Temp.	14mm	6mm Lam. (PVB 0.8mm)	TL6333	36	29

Triple Glazed

GLASS EXT.	GAP	GLASS CENTRE	GAP	GLASS INT.	TEST NUMBER	STC	OITC
6mm Temp.	11mm	4mm Temp.	11mm	4mm Temp.	TL6334	37	29
6mm Temp.	13mm	4mm Temp.	11mm	6mm Lam. (PVB 0.8mm)	TL6336	38	29
6mm Temp.	11mm	4mm Temp.	11mm	8mm Lam. (PVB 0.8mm)	TL6335	39	29

Performance Test Results

Canada

PRODUCT DESIGNATOR	AIR TIGHTNESS	WATER PENETRATION RESISTANCE		UNIFORM LOAD STRUCTURAL	RESISTANCE TO FORCED ENTRY
		LAB TESTED	FIELD TEST ^{1, 2}		
AW-PG40	A3	510 Pa	300Pa	1920 Pa	Grade 20

Series 4503 Lift & Slide Balcony Doors has been tested to AAMA/WDMA/CSA 101 I.S.2/A440-08 and CSA A440SI-09

USA

PRODUCT DESIGNATOR	AIR TIGHTNESS	WATER PENETRATION RESISTANCE		UNIFORM LOAD STRUCTURAL	RESISTANCE TO FORCED ENTRY
		LAB TESTED	FIELD TEST ^{1, 2}		
AW-PG40	0.05 CFM/ft ² @ 6.27 psf	10.70 psf	6.27 psf	60.1 psf	Grade 20

Series 4503 Lift & Slide Balcony Doors has been tested to AAMA/WDMA/CSA 101 I.S.2/A440-08 and CSA A440SI-09

Note: Window complies with ASTM F842 (Forced Entry Resistance) and ASTM E987 (Deglazing Test).

Operating force when tested to ASTM E2068 exceeds the requirement for AW rating.

¹ Water penetration resistance field tests follow the criteria and testing procedures as outlined in the AAMA 502-08 specification standard.

² Field test result is based on an XO configuration interior slider. Please note the following configurations are expected to achieve the following water penetration resistance field tests results:

Interior Slider

- 4503 XO, OX or OXXO 300 Pascal / 6.27 psf
- 4503 XXO or OXX 200 Pascal / 4.18 psf
- 4503 OXXXXO 200 Pascal / 4.18 psf

Exterior Slider

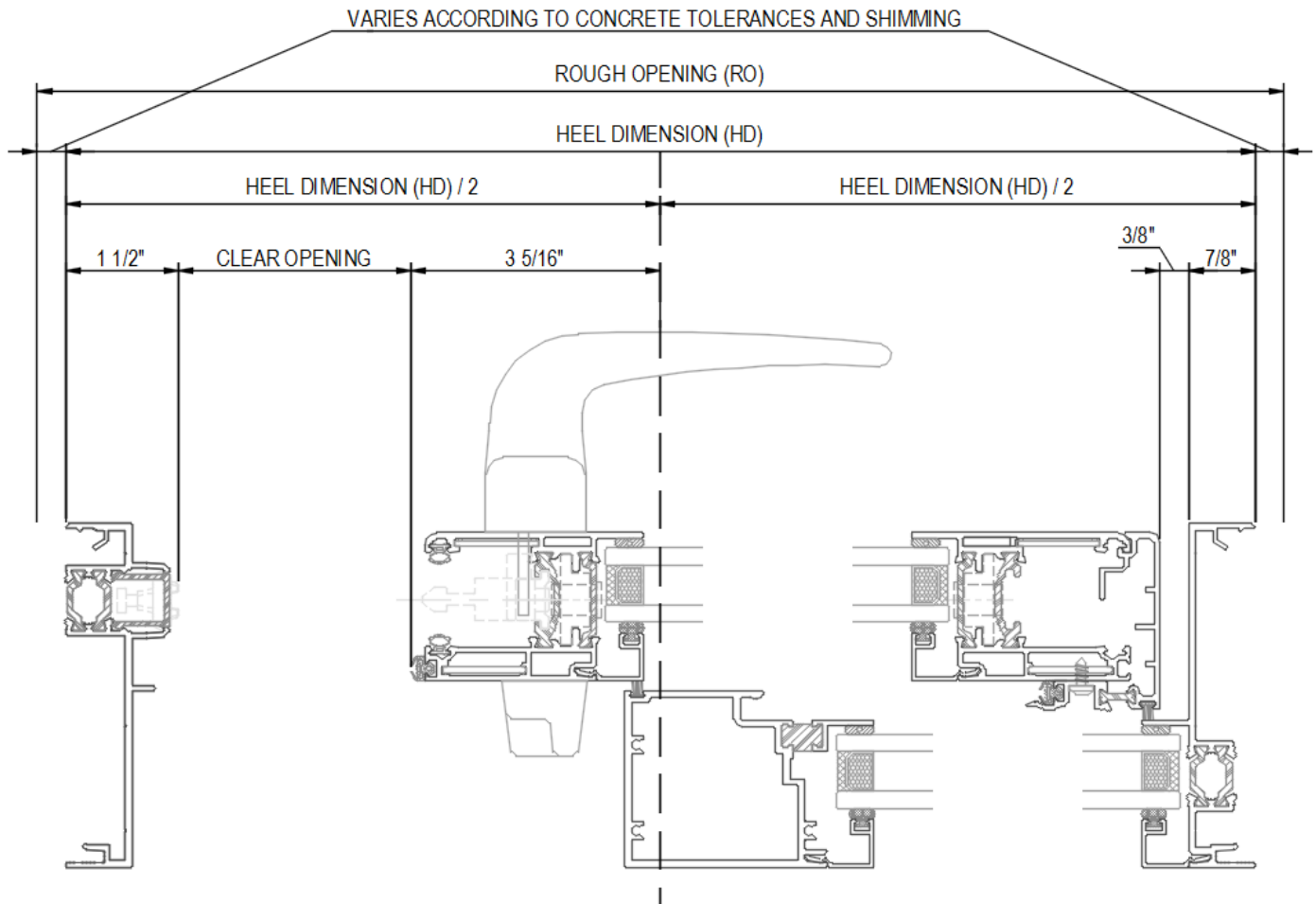
- 4503 XO, OX or OXXO 400 Pascal / 8.35 psf
- 4503 XXO or OXX 300 Pascal / 6.27 psf
- 4503 OXXXXO 300 Pascal / 6.27 psf
-

The above listed values are the maximum field test result that can be achieved. Should the Project Specifications state a water penetration field test requirement of a lesser value, the project specified values shall govern.

Clear Opening Diagrams

Note: The clear opening diagrams show the interior slider, however the calculations to determine the clear opening are the same whether the interior or exterior slider is being used.

XO or OX Clear Opening Between Jamb



32" CLEAR OPENING

CLEAR OPENING – (73.625" / 2) – 4.8125" = 32"

MINIMUM HEEL DIMENSION = 73.625"

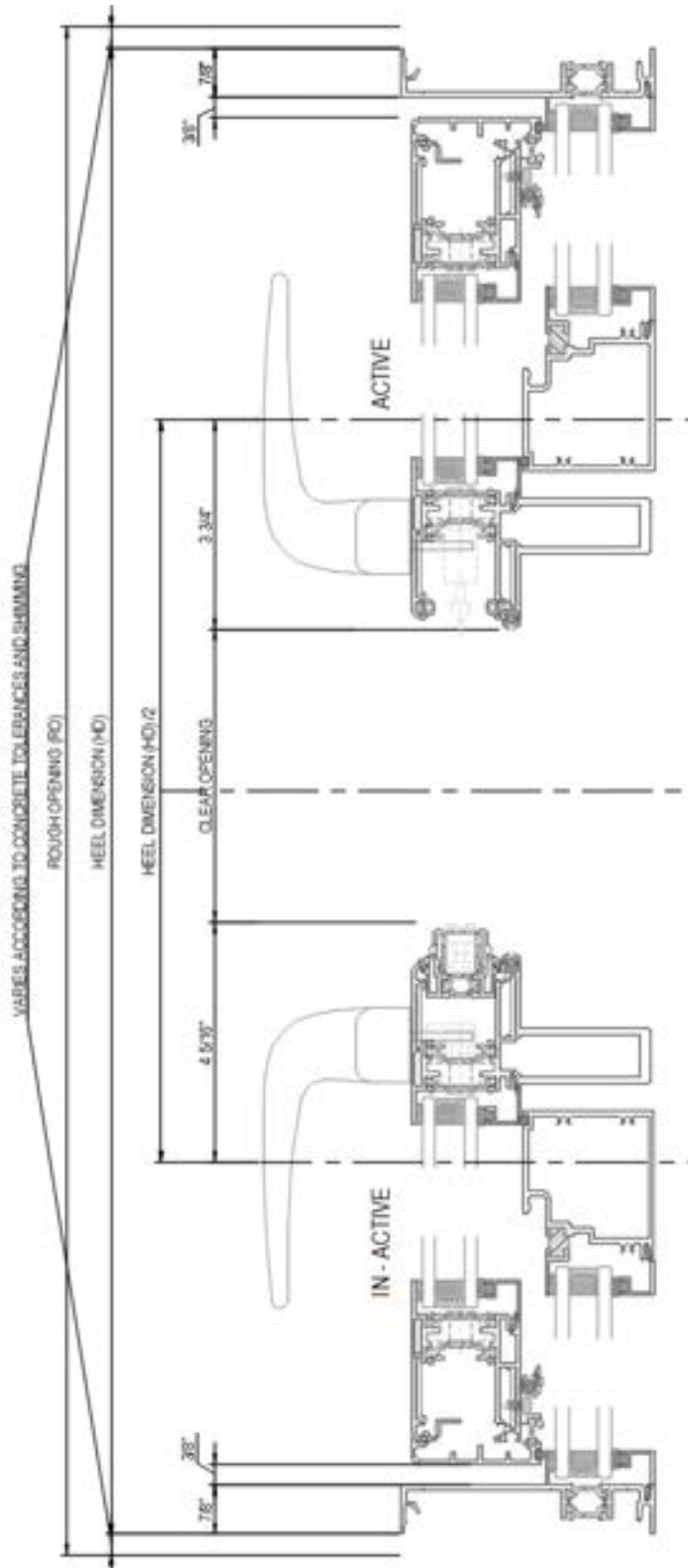
CLEAR OPENING = (HEEL DIMENSION / 2) – 8.0625"

LIMITATIONS OF 4503 XO OR OX SLIDING DOOR:

- MAX. WIDTH (HEEL DIMENSION) = 84"
- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (LEAF DIMENSION) = 42"

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION.

OXXO Clear Opening Between Jambs – Both Panels Open



32" CLEAR OPENING WILL BE ACHIEVED WITH AN OXXO SLIDER DUE TO MINIMUM SLIDER WIDTH OF 30" BEING REQUIRED. MINIMUM HEEL DIMENSION = 120"

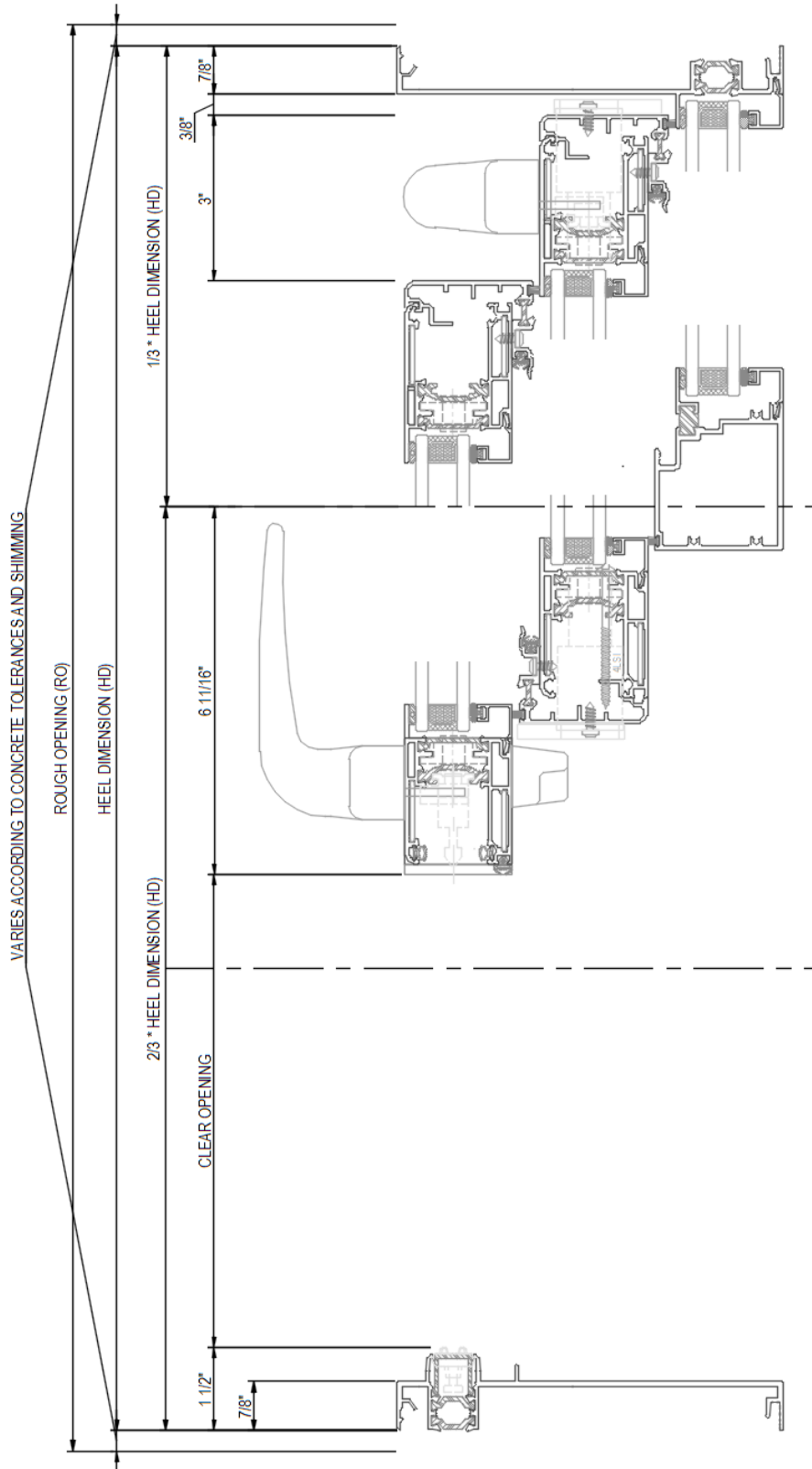
CLEAR OPENING = (HEEL DIMENSION / 2) – 8.0625"

LIMITATIONS OF 4503 OXXO SLIDING DOOR:

- MAX. WIDTH (HEEL DIMENSION) = 168"
- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (LEAF DIMENSION) = 42"

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION.

XXO or OXX Clear Opening Between Jambs – Both Panels Open



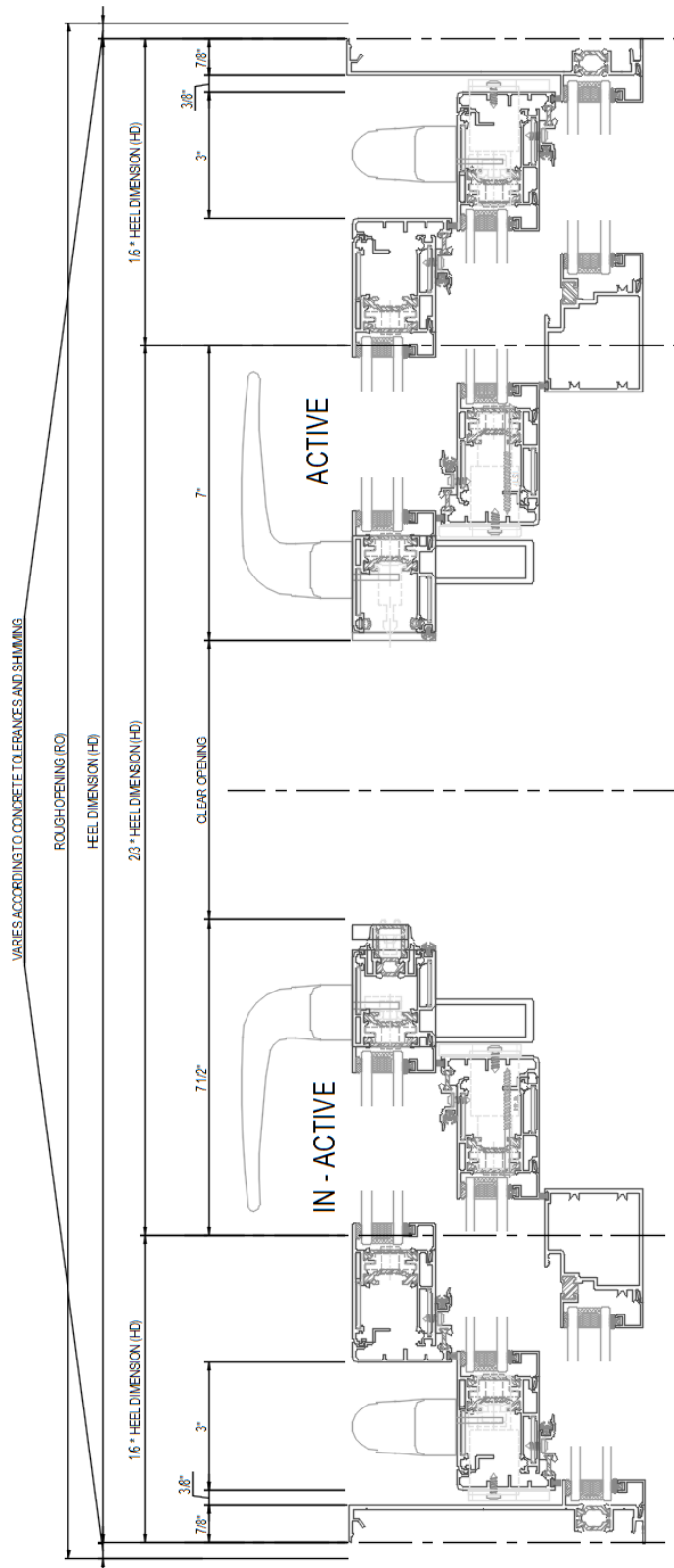
32" CLEAR OPENING WILL BE ACHIEVED WITH AN XXO OR XXO SLIDER DUE TO MINIMUM SLIDER WIDTH OF 30" BEING REQUIRED. MINIMUM HEEL DIMENSION = 90"

CLEAR OPENING = (HEEL DIMENSION x 2/3) – 8.1875"

LIMITATIONS OF 4503 XXO OR OXX SLIDING DOOR: - MAX. WIDTH (HEEL DIMENSION) = 126"
 - MAX. HEIGHT (HEEL DIMENSION) = 108"
 - MAX. WIDTH (LEAF DIMENSION) = 42"

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION.

OXXXXO Clear Opening Between Jambes – All Panels Open



32" CLEAR OPENING WILL BE ACHIEVED WITH AN OXXXXO SLIDER DUE TO MINIMUM SLIDER WIDTH OF 30" BEING REQUIRED. MINIMUM HEEL DIMENSION = 180"

CLEAR OPENING = (HEEL DIMENSION x 2/3) – 14.50"

LIMITATIONS OF 4503 OXXXXO SLIDING DOOR:

- MAX. WIDTH (HEEL DIMENSION) = 240"
- MAX. HEIGHT (HEEL DIMENSION) = 108"
- MAX. WIDTH (LEAF DIMENSION) = 40"

STARLINE WINDOWS IS NOT RESPONSIBLE FOR DETERMINING THE CLEAR OPENING IN ANY JURISDICTION.

Product Specification 08 32 13 – Sliding Aluminum – Framed Glass Door



Note: Bolded text in this specification are options that are highlighted for the specifier to select or to list requirements.

Part 1 - General

A high-quality thermally broken aluminum balcony lift and slide door designed for residential high-rise construction.

1.1 Summary

A. Section Includes: Sliding Aluminum-Framed Glass Doors:

1. Aluminum Window Wall system shall be Starline's Series 4503 Lift and Slide Balcony Door with an **Interior or Exterior** slider, manufactured by Starline Windows.
2. Work included: Furnish labor, material and other services to complete the fabrication and installation of the doors, including all materials and fitments required for the operation of the units in the manner, direction and performance shown on the shop drawings and specified herein.

Work not included: Structural support of door framing, interior trims. (**Specifier list others**).

Related work specified elsewhere: (**Specifier to list**).

B. Related Sections: (**Specifier to select the following related sections**)

1. 07 27 00 – Air Barriers
2. 07 60 00 – Flashing and Trim
3. 07 92 00 – Joint Sealants
4. 08 13 16 – Aluminum Doors (Outswing Aluminum Framed Glass Door)
5. 08 44 13 – Glazed Aluminum Curtain Wall
6. 08 46 13 – Glazed Aluminum Window Wall
7. 08 51 13 – Aluminum Windows
8. 08 80 00 – Glazing

1.2 Quality Assurance

- A. Drawings and specifications for Work of this Section are based upon the Series 4503 Lift and Slide Balcony Door manufactured by Starline Windows. Whenever alternative products are offered, submit supporting technical literature, samples, drawings and performance data for comparison 10 days prior to closing date. Test reports must be made available on request.
- B. Doors shall be tested and conform to the AAMA/WDMA/CSA 101 I.S.2/A440-11 and CSA A440SI-09 requirements.
- C. Manufacturer Qualifications:
 - 1. Manufacturer to have a minimum 10 years of documented experience.
 - 2. Manufacturer capable of providing an aluminum framed sliding glass door system that meet or exceed the performance requirements indicated.
 - 3. Manufacturer capable of providing field representation during window installation.
- D. Installer Qualifications: Installer performing the Work in this Section to have a minimum of 3 years documented experience and approved by the manufacturer.
- E. Mock-Up: If requested by Consultant, a mock up is to be provided and installed at project site. Mock-up to include acceptable products and manufacturer approved installation methods. Obtain Owner's and Consultant's acceptance of finish color, and workmanship standard.

1.3 Structural requirements

- A. Structural performance shall be based on CSA Standard CSA S157 "Strength Design in Aluminum".
- B. Limit mullion deflection to L/175.
- C. Allow for deflection of building structure. Aluminum door frames with a head deflection channel and seismic compensation channel shall be designed, fabricated and installed to withstand slab edge vertical differential deflections of maximum 3/4"¹ and seismic inter-story lateral drift movements of elastic +/- 3/4"¹ without significant damage to the fenestration system or in-elastic +/- 2 1/2"¹ with significant damage expected but framing to be designed to remain anchored to the structure.

¹ Note to specifier: Values may change based on the configuration of the doors. Values to be specified by a Professional Engineer.

1.4 Test and Performance Requirements

Specifier to select from the following performance requirements.

- A. Doors shall meet performance class **AW-PG40**¹ when tested to AAMA/WDMA/CSA 101 I.S.2/A440-11 and CSA A440SI-09:
 - 1. Air Infiltration: Sliding door air infiltration shall not exceed 0.05 cfm/ft² (A3) when tested in accordance with ASTM E 283 with a pressure difference of 6.27 psf / 300 Pa.
 - 2. Water Penetration Resistance:
 - i. There shall be no water infiltration for doors when tested in accordance with ASTM E547 with a pressure difference of 10.70 psf / 510 Pa (Laboratory Test).
 - ii. There shall be no water infiltration for doors when tested in accordance with AAMA 502-08 with a pressure difference up to a maximum of 6.27 psf / 300 Pa (Field Test) ²
 - 3. Uniform Load Deflection Test: The deflection of the door shall not exceed L/175 and there shall be no permanent set when tested in accordance with ASTM E330 with a design pressure of 40 psf / 1920 Pa, positive and negative.

4. Uniform Load Structural Test: There shall be no damage to hardware, accessories, fasteners, or any other damage that would render the door inoperable when tested in accordance with ASTM E330 with a structural test pressure of 60 psf / 2880 Pa, positive and negative.
5. Forced Entry Resistance: Door shall meet grade 20 when tested to ASTM F842.
6. Thermal Performance³
 - I. U-value: The maximum door thermal transmittance U-value shall be **0.40 BTU/ hr*ft²*°F (2.24 W/m²*K) for double glazed and /or 0.33 BTU/ hr*ft²*°F (1.86 W/m²*k) for triple glazed** when tested in accordance with AAMA 1503.1 and CAN/CSA-A440.2. Door shall be tested and labeled to N.F.R.C. standard 100 & 200. (Specifier to select)
 - II. Solar Heat Gain Coefficient: A (**maximum or minimum**) of **0.32 for double glazed and /or 0.30 for triple glazed.**
 - III. Visible Light Transmittance: A (**maximum or minimum**) of **0.58 for double glazed and /or 0.54 for triple glazed.**

¹ Note to specifier: Performance class result is based on lab testing and will vary by configuration and glass type. Contact Starline Windows for information on how the product can be engineered to achieve higher performance class than specified above.

² Note to specifier: Field test result is based on an XO configuration. Please note the following configurations are expected to achieve the following water penetration resistance field tests results:

Interior Slider

- 4503 XO, OX or OXXO 300 Pascal / 6.27 psf
- 4503 XXO or OXX 200 Pascal / 4.18 psf
- 4503 OXXXXO 200 Pascal / 4.18 psf

Exterior Slider

- 4503 XO, OX or OXXO 400 Pascal / 8.35 psf
- 4503 XXO or OXX 300 Pascal / 6.27 psf
- 4503 OXXXXO 300 Pascal / 6.27 psf

The above listed values are the maximum field test result that can be achieved. Should the Project Specifications state a water penetration field test requirement of a lesser value, the project specified values shall govern.

The above values are the maximum field test result that can be achieved. Should the Project Specifications state a water penetration resistance field test pressure of a lesser value, the project specified values shall govern. The water penetration resistance field tests shall follow the criteria and testing procedures as outlined in the AAMA 502-08 specification standard.

³ Note to specifier: Thermal performance depends on glass specified. For double glazed values the above test was performed using 25mm double glazed insulated glass unit (5mm/Air/5mm) with standard high-performance soft coat (sputtered) Low E which is applied to surface #2, air filled with warm edge spacer bar. For triple glazed values the above test was performed using 37mm triple glazed insulated glass unit (4mm/Air/4mm/Air/4mm) with standard high-performance soft coat (sputtered) Low E which is applied to surface #2, air filled with warm edge spacer bar. Please note: A second low E coating can be applied to surface #4 for the double glazed unit and surface #4 & #6 for the triple glazed unit to further increase the thermal performance. For both double and triple glazed the NFRC door test size was 79" x79" (2000mm x 2000mm).

1.5 Submittals

- A. Product Data: Submit complete product data on system being used.
- B. Shop Drawings: Submit complete shop drawings which include floor plans, elevations, door schedule, and product components including anchorage, fasteners, accessories and finish colour.
- C. Samples: Submit glass and frame colour(s) samples.

D. Close-out Submittals:

1. Warranty: Submit executed Manufacturer's warranty which provides a guarantee for the complete installation provided under this section against defective material and workmanship which appears within a period of two years from the date of substantial completion.
2. Project Record Documents: Submit operation and maintenance data for installed product in accordance with General Conditions

1.6 Project Conditions

- A. Field Measurements: Verify actual measurements / openings by field measurements prior to fabrication, until it is agreed upon in writing between the Window Manufacturer and the General Contractor that floors become "typical". Once typical the doors can be ordered off the previous field measurements.
- B. Indicate field measurements on shop drawings.

Part 2 – Products

2.1 Manufacturers

- A. Acceptable Manufacturers: Starline Windows
 1. Sliding Aluminum-Framed Glass Door: Series 4503.
- B. Substitutions: Approved alternates

2.2 Material

- A. Aluminum Extrusion: 4 1/2" deep perimeter frame member for XO, OX, and OXXO configurations (couples to window wall). 7" deep frame member for XXO, OXX and OXXXXO configurations (requires own rough opening). Frame member and intermediate bars are extruded from aluminum sections of 6063 alloy, T5 temper with a minimum thickness of 0.064".
- B. Fasteners: Stainless steel and of sufficient size and quantity to perform their intended function.
- C. Glazing Gaskets: Extruded Santoprene.
- D. Glass Setting Blocks & Edge Blocks: FPVC, Neoprene, EPDM, Santoprene or silicone with an 80 to 90 ± Shore A durometer hardness. Block material shall be compatible with sealed unit edge sealant. Setting blocks for sealed units with silicone edge seals must be silicone.
- E. Glazing bead: Extruded aluminum and glazed from the outside.
- F. Thermal break: Polyamide.

2.3 Fabrication

- A. Fabricate framing from extrusions of size and shape shown on shop drawings.
- B. Interior and exterior extruded aluminum framing sections shall be integrated with a Polyamide thermal break to form a rigid composite assembly without the use of fasteners or other thermal bridging elements. Dry shrinkage of polyamide thermal break shall not exceed 0.10% of the framing member length.
- C. Main framing and sliding ventilator extrusions shall be butt corner construction.
- D. All framing profiles shall be straight and free of deformations and defects.
- E. Joints shall be accurately machined, fitted and sealed.
- F. Coupling mullions shall be designed to provide a functional split to permit modular construction and allow for thermal expansion.

- G. Perimeter frame shall be 4 1/2" deep for an OX, XO, OXX or XXO configuration and 7" deep for OXXO or OXXXXO configuration, with a minimum wall thickness of .064" (1.60mm) and be thermally broken.
- H. Sliding ventilator shall be 2" deep and shall have a minimum wall thickness of .064" (1.60mm) and be thermally broken.
- I. All frame corners are mechanically joined by stainless steel screws.
- J. All interior joints and interior screw heads shall be sealed with a non-hardening sealant.
- K. Sliding ventilator shall have a single EPDM seal at the interlock. The sill, the head and the jamb at the frame shall have a EPDM compression seal.
- L. All glazing pockets shall be vented, pressure equalized, and drained to the vertical extrusions.
- M. Glass bead shall be aluminum and a snap-in screw less type at the fixed lite. The slider lite is glazed with an insulating glass with a full perimeter flexible Santoprene glazing gasket.

2.4 Glazing¹

- A. Double glazed, double seal insulated glass unit with an overall thickness of 1" (25 mm). Triple glazed available (Refer to [2.7.A.1](#) of this specification).
- B. Standard high performance soft coat (sputtered) Low E applied to surface #2.
- C. Black warm edge spacer with air fill.
- D. Minimum glass thickness shall be 4mm. Glass thickness and quality shall conform to the requirements of the U.S.A. and Canadian Code for commercial construction, current edition.
- E. Glass shall be tempered.
- F. Where practical, glazing shall be installed at the factory before shipping to site.

¹ Note to specifier: Glazing noted above is based on Starline Windows standard product offering. There are various other options available. See [2.7.A.](#) of this specification.

2.5 Hardware

- A. Hardware shall be furnished by the door manufacturer.
- B. Where practical, all hardware fittings shall be installed at the factory before shipping to site.
- C. Hardware shall be as follows:
 - 2. Sliding panel shall slide on adjustable ball bearing steel wheels.
 - 3. Equipped with an interior multi-point locking handle that positively engages with an adjustable keeper at the frame jamb. Interior handle to be made from die cast aluminum. The interior handle is available in black, white or silver.
 - 4. Equipped with an exterior raised pull tab handle made of high impact plastic.¹ The exterior handle is available in black or white.

¹ Note to Specifier: If a reinforced sash is used there is no exterior handle as the frame profile for a reinforced sash provides a place to grip to allow you to open and close the door.

2.6 Finishes (Powder Coating)

- A. All exposed surfaces of aluminum door and framing members shall be free of scratches and other serious surface blemishes.
- B. Finishes¹.
 - 1. **Thermoset coating specifically designed for architectural systems. Coating to comply with AAMA 2603 specification and / or**
 - 2. **Upgrade to a thermoset super durable coating which complies with the AAMA 2604 specification standards. The AAMA 2604 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 specification standard.**
 - 3. **Upgrade to a thermoset fluorocarbon coating which is a superior coating that complies with the AAMA 2605 specification standard. The AAMA 2605 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 and AAMA 2604 specification standards.**
- C. Colour Options².
 - 1. Standard colours are as follows. **(Specifier to select from the standard colour(s) listed below).** These standard colours are **available in the AAMA 2603, AAMA 2604 and AAMA 2605 specification.**

White	Black	Brown	Silver³
Charcoal Grey			

- 2. Semi-standard colours⁴ are as follows. **(Specifier to select from the semi-standard colour(s) listed below).** These semi-standard colours are **available in the AAMA 2603, AAMA 2604 and AAMA 2605 specification.**

Graphite Grey	Grey Velvet	Iron Mountain Grey	Metal Shavings Grey
Black Charcoal	Kendall Charcoal	Beige	

¹ Note to Specifier: Select 2.6.B.1 and/or 2.6.B.2 and/or 2.6.B.3. Option to have dual frame colour and / or AAMA 2603 coating on interior and AAMA 2604 or AAMA 2605 coating on exterior is available, if standard and / or semi-standard and / or custom colour is selected. Refer to [2.7.E.1](#) of this specification. AAMA 2604 or AAMA 2605 specification standard on exterior of frames may be required in some building codes, bylaws, jurisdictions, etc.

² Note to Specifier: Refer to [2.7.E.2](#) of this specification for Custom Colours.

³ Note to Specifier: Silver is available for an additional cost.

⁴ Note to Specifier: Semi-standard colours are available for an additional cost. May require up to a 4-week lead time.

2.7 Optional Items

- A. Glazing
 - 1. Triple glazed, double seal insulated glass unit with an overall thickness of 1 7/16" (37mm), complete with black warm edge spacer. Glass thickness shall be 4mm and tempered.
 - 2. Varying glass thickness available in 4mm or greater **(Specifier to select glass thickness required).**
 - 3. Tinted, obscured & reflective glass
 - 4. Laminated glass
 - 5. Spacer Bars

- B. Deflection channel
- C. Bypass – Available for OX and XO configurations and can be used on Juliette balcony locations only.
- D. Transoms. Available for OX and XO configurations only. Vision glazing not available.
 - 1. Spandrel Glass
 - 2. Metal Panel
- E. Finishes (Powder Coating)
 - 1. Dual frame color – 1 color on exterior and 1 color on interior (refer to [2.6.C](#) for color options)
 - i. Finish to comply with AAMA 2603 standard on both interior and exterior.
 - ii. Finish to comply with AAMA 2604 standard on both interior and exterior.
 - iii. Finish to comply with AAMA 2605 standard on both interior and exterior.
 - iv. Finishes to comply with AAMA 2603 standard on interior and AAMA 2604 standard on exterior.
 - v. Finishes to comply with AAMA 2603 standard on interior and AAMA 2605 standard on exterior.
 - 2. **Custom colours**¹. Virtually any colour can be matched or very closely matched. The scope of work and overall custom colour quantity will be reviewed by Starline on a project specific basis to determine the feasibility of the custom colour request.

¹ Note to Specifier: Custom colours are available for an additional cost premium. An approximate 12-week lead time is required to procure custom colour requests.

Part 3 - Execution

3.1 Examination

- A. Installer to examine openings, structural support, substrates and any other conditions that would affect the installation, for compliance with manufacturer's instructions.
- B. Verify rough opening dimensions.
- C. Verify sill is within tolerance of levelness to ensure adequate shimming to obtain proper drainage.

3.2 Installation

- A. Install manufacturer's system in accordance with manufacturer's approved shop drawings.
- B. Doors shall be installed and adjusted by experienced personnel in accordance with the manufacturer instructions and approved shop drawings.
- C. All items in this section shall be set in their correct location and shall be set level, square, plumb and at proper elevations and in alignment with other work.
- D. The doors are installed at site with a maximum variance to plumb of +/- 0.25%. (+/- 1/4" / 96").

3.3 Field Quality and Control

- A. Manufacturer's Field Services: Upon Owner and/or Consultants written request, provide manufacturer's field service representative for site visit to inspect installation and to ensure accordance with manufacturer's instruction and approved shop drawings.
- B. Field Tests: Owner and/or Consultant may choose to conduct tests for water penetration and air infiltration.
 - 1. Testing Standard per AAMA 502.

2. Field testing shall be performed by a qualified independent testing agency.
3. Field testing should not occur until the window has been installed and the caulking is cured. Ensure the products used to complete building envelope tie in (membrane, caulking, flashing, cladding, etc.) are installed complete and have cured.

3.4 Protection and Cleaning

A. Protection:

1. Doors shall be protected with blue poly during and after installation until acceptance by the General Contractor. Thereafter, it shall be the responsibility of the General Contractor to protect the installed product from construction damage.
2. Windows shall be isolated from concrete, mortar, plaster and dissimilar metals with bituminous paint or other isolation coatings.

B. Cleaning: It shall be the responsibility of the General Contractor to maintain protection and provide final cleaning.

Note: This specification is intended to be used by a qualified Specifier and will require modifications for the project specific requirements. This specification is not intended to be use verbatim as the project specific specification.

Laws, building and safety codes governing the design and use of this product vary widely. Starline Windows does not control the selection and use of this product and assumes no responsibility therefor.

Series 4503 Double Glazed NFRC Product Energy Chart

Series 4503 NFRC PRODUCT ENERGY CHART

DOUBLE GLAZED (24mm IGU)	GLAZING (Ext/Gap/Int)	SPACER	U VALUE (W/M ² k)	U VALUE (Btu/hft ² F)	Shading Coefficient	Solar Heat Gain Coefficient	Visible Light Transmittance	CPD (Certified Product Directory)
Center of Glass (COG)	5mm Solarban 60 (#2) / Air / 5mm Clear	9/16" Alum	1.69	0.30	0.44	0.38	0.71	
	5mm Solarban 60 (#2) / Arg / 5mm Clear	9/16" Alum	1.43	0.25	0.44	0.38	0.71	
	5mm Solarban 60 (#2) / Air / 5mm Clear	14.6mm WE	1.69	0.30	0.44	0.38	0.71	
	5mm Solarban 60 (#2) / Arg / 5mm Clear	14.6mm WE	1.43	0.25	0.44	0.38	0.71	

Lift & Slide Door	5mm Solarban 60 (#2) / Air / 5mm Clear	9/16" Alum	2.33	0.41	0.37	0.32	0.58	STL-A-29-00015-00001
	5mm Solarban 60 (#2) / Arg / 5mm Clear	9/16" Alum	2.10	0.37	0.36	0.32	0.58	STL-A-29-00048-00001
	5mm Solarban 60 (#2) / Air / 5mm Clear	14.6mm WE	2.24	0.40	0.37	0.32	0.58	STL-A-29-00135-00001
	5mm Solarban 60 (#2) / Arg / 5mm Clear	14.6mm WE	2.04	0.36	0.36	0.32	0.58	STL-A-29-00168-00001

I.G.U. (Insulated Glass Unit) Reference Codes	GLASS	FILL	SPACER
	5mm Solarban 60 (#2 surface) = 5283 5mm Clear = 5011	Air = 1 Argon ¹ = 9	Aluminum Spacer = 9/16" Alum Warm Edge Spacer = 14.6mm WE

Based on NFRC CPD - Certification Date: July 15, 2013 Expiration Date: May 23, 2017

Fenestration = Frame, mullions, sash and vision glass. Refer to www.nfrc.org for more information.

¹ Argon not standard offering for USA projects.



Prepared by:
Kurt Leano
NFRC Certified Simulator

Note: The energy values above are based on the NFRC gateway testing sizes. Project-specific energy values will depend on glazing make-up and door module configurations. Contact technical@starlinewindows.com for project-specific inquiries.

Series 4503 Triple Glazed 1 Low E NFRC Product Energy Chart

NFRC PRODUCT ENERGY CHART

TRIPLE GLAZED (37mm IGU)	GLAZING (Ext/Gap/Ctr/Gap/Int)	SPACER	U VALUE (W/M ² K)	U VALUE (Btu/hft ² F)	Shading Coefficient	Solar Heat Gain Coefficient	Visible Light Transmittance	CPD (Certified Product Directory)
Center of Glass (COG)	4mm SB60 (#2) / Air / 4mm Clear / Air / 4mm Clear	1/2", 7/16" Alum	1.24	0.22	0.41	0.36	0.66	
	4mm SB60 (#2) / Arg / 4mm Clear / Air / 4mm Clear	1/2", 7/16" Alum	1.08	0.19	0.41	0.36	0.66	
	4mm SB60 (#2) / Air / 4mm Clear / Air / 4mm Clear	13.6, 11.6mm WE	1.24	0.22	0.41	0.36	0.66	
	4mm SB60 (#2) / Arg / 4mm Clear / Air / 4mm Clear	13.6, 11.6mm WE	1.09	0.19	0.41	0.36	0.66	
Lift & Slide Door	4mm SB60 (#2) / Air / 4mm Clear / Air / 4mm Clear	1/2", 7/16" Alum	1.94	0.34	0.34	0.30	0.54	STL-A-29-00067-00001
	4mm SB60 (#2) / Arg / 4mm Clear / Air / 4mm Clear	1/2", 7/16" Alum	1.82	0.32	0.34	0.30	0.54	STL-A-29-00094-00001
	4mm SB60 (#2) / Air / 4mm Clear / Air / 4mm Clear	13.6, 11.6mm WE	1.86	0.33	0.34	0.30	0.54	STL-A-29-00187-00001
	4mm SB60 (#2) / Arg / 4mm Clear / Air / 4mm Clear	13.6, 11.6mm WE	1.75	0.31	0.34	0.30	0.54	STL-A-29-00214-00001
I.G.U. (Insulated Glass Unit) Reference Codes	GLASS		FILL		SPACER			
	4mm Solarban 60 (#2 surface) = 5282 4mm Clear = 5010		Air = 1 Argon ¹ = 9		Aluminum Spacer = 1/2" & 7/16" Alum Warm Edge Spacer = 13.6mm & 11.6mm WE			

Based on NFRC CPD - Certification Date: July 15, 2013 Expiration Date: May 23, 2017

Fenestration = Frame, mullions, sash and vision glass. Refer to www.nfrc.org for more information.

¹ Argon not standard offering for USA projects.



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Series 4503 Triple Glazed 2 Low E NFRC Product Energy Chart

NFRC PRODUCT ENERGY CHART

TRIPLE GLAZED (37mm IGU)	GLAZING (Ext/Gap/Ctr/Gap/Int)	SPACER	U VALUE (W/M ² K)	U VALUE (Btu/hft ² F)	Shading Coefficient	Solar Heat Gain Coefficient	Visible Light Transmittance	CPD (Certified Product Directory)
Center of Glass (COG)	4mm SB60 (#2) / Air / 4mm SB60 / Air / 4mm Clear	1/2", 7/16" Alum	0.91	0.16	0.36	0.31	0.58	
	4mm SB60 (#2) / Arg / 4mm SB60 / Air / 4mm Clear	1/2", 7/16" Alum	0.82	0.14	0.36	0.32	0.58	
	4mm SB60 (#2) / Air / 4mm SB60 / Air / 4mm Clear	13.6, 11.6mm WE	0.91	0.16	0.36	0.31	0.58	
	4mm SB60 (#2) / Arg / 4mm SB60 / Air / 4mm Clear	13.6, 11.6mm WE	0.82	0.14	0.36	0.32	0.58	
Lift & Slide Door	4mm SB60 (#2) / Air / 4mm SB60 / Air / 4mm Clear	1/2", 7/16" Alum	1.68	0.30	0.30	0.26	0.47	STL-A-29-00069-00001
	4mm SB60 (#2) / Arg / 4mm SB60 / Air / 4mm Clear	1/2", 7/16" Alum	1.61	0.28	0.30	0.27	0.47	STL-A-29-00096-00001
	4mm SB60 (#2) / Air / 4mm SB60 / Air / 4mm Clear	13.6, 11.6mm WE	1.60	0.28	0.30	0.26	0.47	STL-A-29-00189-00001
	4mm SB60 (#2) / Arg / 4mm SB60 / Air / 4mm Clear	13.6, 11.6mm WE	1.53	0.27	0.30	0.27	0.47	STL-A-29-00216-00001
I.G.U. (Insulated Glass Unit) Reference Codes	GLASS		FILL		SPACER			
	4mm Solarban 60 (#2 & #4 surfaces) = 5282 4mm Clear = 5010		Air = 1 Argon ¹ = 9		Aluminum Spacer = 1/2" & 7/16" Alum Warm Edge Spacer = 13.6mm & 11.6mm WE			

Based on NFRC CPD - Certification Date: July 15, 2013 Expiration Date: May 23, 2017

Fenestration = Frame, mullions, sash and vision glass. Refer to www.nfrc.org for more information.

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Note: The energy values above are based on the NFRC gateway testing sizes. Project-specific energy values will depend on glazing make-up and door module configurations. Contact technical@starlinewindows.com for project-specific inquiries.