



OPTIMA™
Casement Window Solutions



Stainless as the New Standard!



OPTIMA™ DUAL-ARM, DYAD & AWNING CASEMENT OPERATOR SYSTEM	1
OPTIMA™ MULTI-POINT CASEMENT LOCK SYSTEM	3
OPTIMA™ MULTI-POINT CASEMENT LOCK SYSTEM FOR WOOD WINDOWS	5
OPTIMA™ CONCEALED CASEMENT & AWNING HINGES.....	7
OPTIMA™ CASEMENT, AWNING VISUALS & ACCESSORIES.....	9
OPTIMA™ TECH SHEETS	
OPTIMA™ CASEMENT OPERATORS.....	11
OPTIMA™ CASEMENT DYAD OPERATORS.....	13
OPTIMA™ CASEMENT DUAL-ARM OPERATORS.....	15
OPTIMA™ CASEMENT AWNING OPERATORS.....	17
OPTIMA™ FABRICATION HOLE AND MOUNTING.....	19
OPTIMA™ ACCESSORIES.....	21
OPTIMA™ CASEMENT AND AWNING OPERATOR VISUALS.....	23
OPTIMA™ CASEMENT HINGES.....	25
OPTIMA™ AWNING HINGES.....	27
OPTIMA™ CASEMENT AND AWNING LOCKING HARDWARE.....	29
OPTIMA™ LOCK BAR SIZE CHART AND NUMBERING SYSTEM.....	31
OPTIMA™ KEEPERS, RETAINERS AND BACKING PLATES.....	33
OPTIMA™ CASEMENT LOCK VISUALS AND AWNING LOCKS.....	35
OPTIMA™ AWNING LOCK ACTUATORS AND SNUBBERS.....	37
OPTIMA™ WOOD CASEMENT AND AWNING LOCKS.....	39
OPTIMA™ KEEPER PLACEMENT AND RETAINERS.....	41
OPTIMA™ WOOD CASEMENT LOCK VISUALS.....	43



Dual Arm

HIGHLIGHTS

- Coastal Stainless Steel Protection
- Unique O-Ring eliminates air and water leaks
- Manufacturing upgrades like Pre-Installed Gaskets
- Low Wear Operator Joints engineered for smooth, effortless operation
- Composite Base gives clean underside view and thermal transfer protection
- Two Visual Options in multiple finishes
- AAMA Commercial Grade
- Reduce SKUs and keep costs low



Unique O-Ring



Pre-Installed Gaskets



Low Wear Operator Joints



Composite Base



Two Visual Options



Commercial Grade



STAINLESS STEEL PROTECTION

- Premium Coastal Grade *Stainless as Standard*
- No red rust. No paint on steel components to wear off, chip, peel or scratch
- Smooth low wear joint connections
- Cuts SKU's virtually in half versus having a special "Coastal Program"
- Stainless parts are factory friendly for bulk handling

ENGINEERED FOR PERFORMANCE

- Water tight, unique O-ring seal technology holds back 4x more water than others to help maximize DP ratings
- Pre-installed gaskets visibly seal all frame and operator gaps for maximum protection
- AAMA 901-10 cycle test - Commercial Grade
- Commercial hardware load test - Commercial Grade on 36" x 80", 119 lb. window
- Tested to DP70 in both impact and non-impact markets
- Longer visual nesting cranks provide up to 15% greater mechanical advantage for operating windows



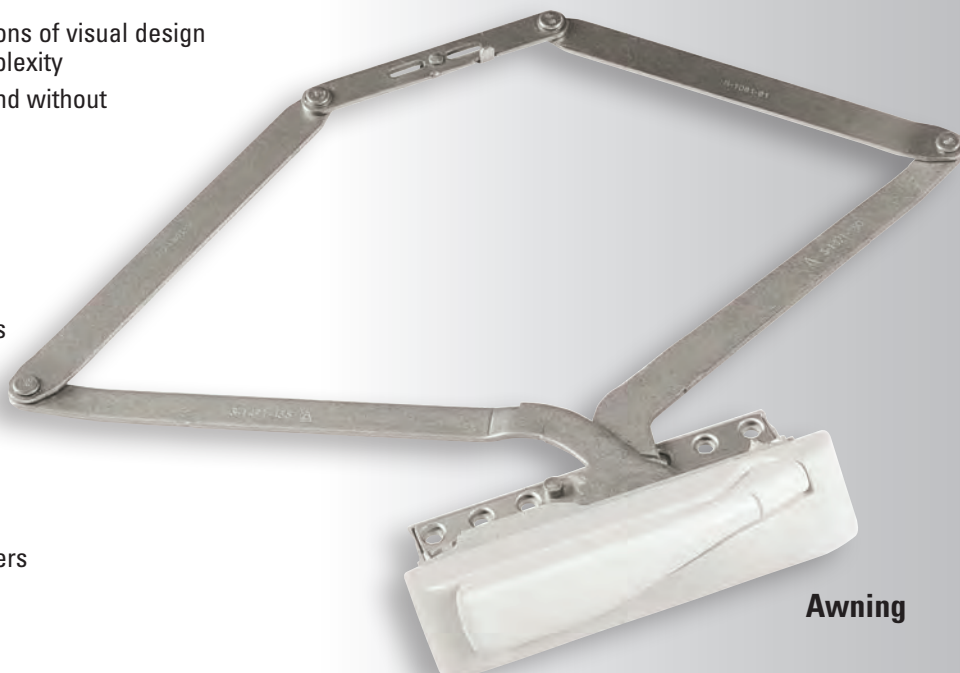
Dyad

DEVELOPED FOR MANUFACTURING

- Pre-installed frame gasket saves time in the factory
- Easy plug-and-play with industry standard route sizes and locations
- Operator snaps into place ready for screw mounting and aids in operator alignment
- Same base platform accepts several options of visual design and finish color, reducing SKU's and complexity
- Casement sash brackets available with and without self-locating features

DESIGNED FOR STYLE

- Fold-down flush and nesting visuals are available as standard
- Removable visuals reduce inventory costs and allow for easy finish change later
- Composite base has clean line to look good on elevated window applications
- Available in two distinct styles and all popular plated and powder coated finishes
- Longer nesting cranks centered with covers for a balanced appearance

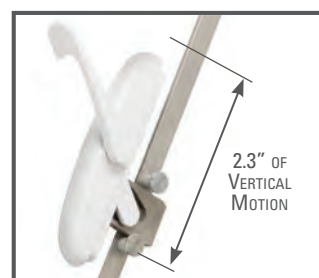


Awning



LOCK BAR

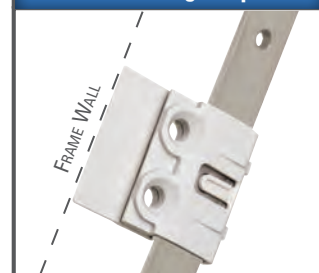
LOCK ACTUATOR



Extended Travel



Self-Locating Keeper



Self-Locating Retainer



Vertical Position



Pre-Applied Gasket



Awning Lock

HIGHLIGHTS

- Coastal Stainless Steel Protection
- 30% Longer lock bar travel provides industry best sash pull-in
- Self-Locating components to ease assembly
- Pre-applied frame gasket
- Single-point awning lock for easy installation
- Achieves up to DP90 performance and Miami-Dade impact
- Reduce SKU's and keep costs low



STAINLESS STEEL PROTECTION

- Premium Coastal Grade *Stainless as Standard*
- No red rust. No paint on steel components to wear off, chip, peel or scratch
- Smooth low wear joint connections
- Cuts SKU's virtually in half versus having a special "Coastal Program"
- Stainless parts are factory friendly for bulk handling

ENGINEERED FOR PERFORMANCE

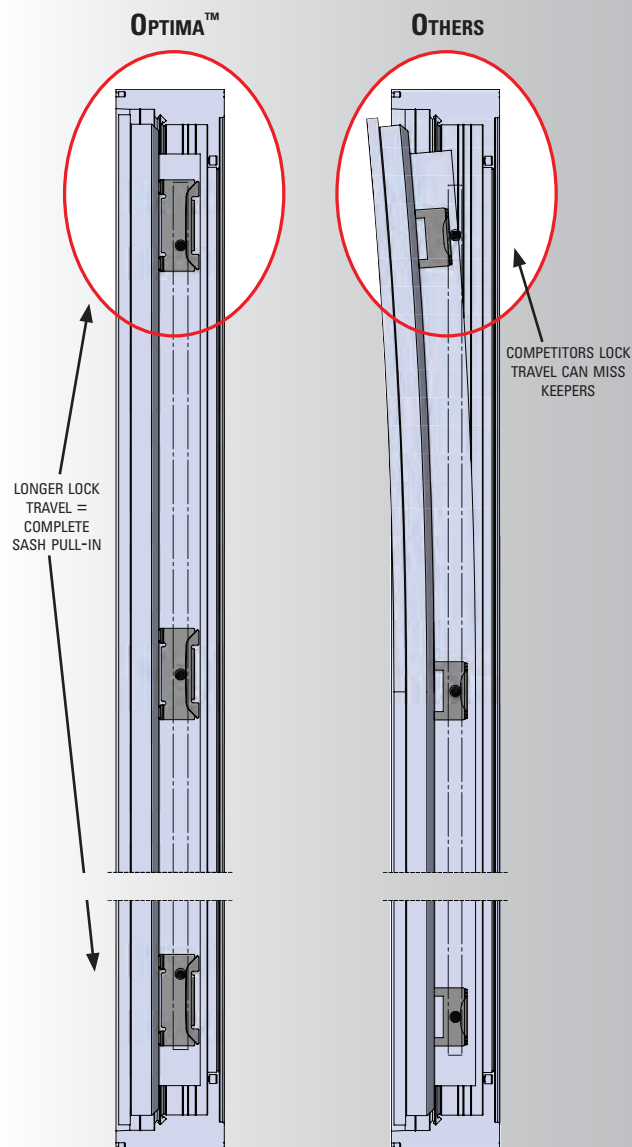
- Industry best for sash pull-in. Achieves up to 30% more sash pull-in than competition.
 - Extended lock bar travel to ensure upper-most lock points always engages keeper on tallest windows
 - No need for added parts to achieve maximum pull-in
- 30% longer lock bar travel accentuates staged locking "Zipper Effect" to provide smooth and consistent locking motion
- Locking pins interlock with keepers to achieve up to DP90 performance
- Composite rollers around each lock pin help glide rollers along keeper
- Engineered audible click registers when the lock is fully locked and unlocked
- Numerous keeper and lock bar retainers are available to achieve best fit, feel and performance

DEVELOPED FOR MANUFACTURING

- 30% More vertical lock bar travel can accommodate up to 1/8" of placement tolerance for each keeper
- Easy plug-and-play with industry standard route sizes and locations
- Self-locating retainers and keepers for ease of installation
- Retainers snap into vertical positioning holes on the lock bar making lock installation fast and easy
- Pre-applied frame gasket to prevent air and water leakage
- Industry minimum locking points per window
- Only one lock retainer for each lock point, the industry minimum
- Awning locks are single point lock systems that perform like others multi-point systems
 - Awning locks can use the same keeper as casement

DESIGNED FOR STYLE

- Designed to complement both operator visual styles
- Featured curvature of the lock handle gives it a distinct look and feel
- Clean and unobtrusive appearance
- Preferred visual look as found during market research
- Awning and casement lock actuators look identical



**BENEFIT OF EXTENDED
LOCK BAR TRAVEL**



Visual Options



Self-Locating Retainer



Non-Handed Base Assembly



Interlocking Pins



Various Keepers

HIGHLIGHTS

- Coastal Stainless Steel Protection
- Easy install visuals snap on securely and allow for manufacturing tolerances
- Self-locating retainers to ease assembly
- Lock base pre-assembled and non-handed
- Interlocking Pins and Keepers to achieve up to DP70 performance
- Several keeper and retainer options to achieve best fit



STAINLESS STEEL PROTECTION

- Premium Coastal Grade *Stainless as Standard*
- No red rust. No paint on steel components to wear off, chip, peel or scratch
- Smooth low wear joint connections
- Cuts SKU's virtually in half versus having a special "Coastal Program"
- Stainless parts are factory friendly for bulk handling

ENGINEERED FOR PERFORMANCE

- Locking pins interlock with keepers to achieve DP70 performance
- Composite rollers around each lock pin help glide rollers along keeper
- Staged locking "Zipper Effect" during lock-up help with consistent locking effort
- Numerous keeper and lock bar retainers are available to achieve best fit, feel and performance
- Lock levers snap securely onto the lock base and does not slip off



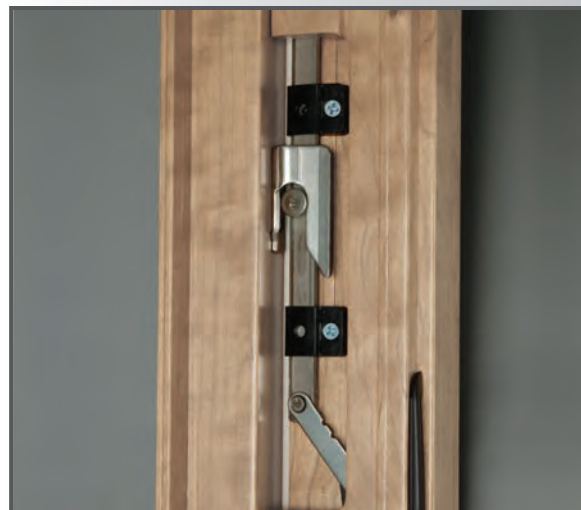
Simple route pattern with a positive bezel mounting location on a lock base

DEVELOPED FOR MANUFACTURING

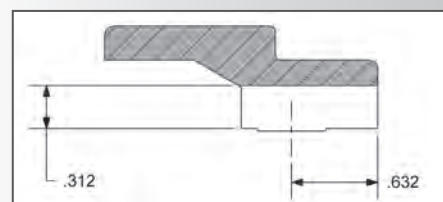
- Low profile design to fit many current window designs
- Easy transition with minimal window processing changes
- Self-locating lock bar retainers locate lock points both in and out and up and down
- Handle and bezel are removable from lock mechanism, reducing shipping damage
- Lock "base" is pre-assembled to the lock bar to minimize SKU's while still remaining non-handed.

DESIGNED FOR STYLE

- Slender low-profile design is at the same time elegant and concealable
- Available in metal and composite materials to allow for many standard and premium finishes
- Lock bezel snaps directly onto lock mechanism and not wood stop for better quality control
- Removable lock handles and bezels allow consumers to more easily change window finish later



Low profile design to fit under most wood casement stops



Minimal wood removal from glass stop



CASEMENT HINGE
(10" & 14")

HIGHLIGHTS

- Coastal Stainless Steel Protection
- 25% more adjustability than competition (*Casement*)
- Two means of adjustment is standard
- Easy installation of hinge arms into track, with added safety feature
- Accessible friction adjustment (*Awning*)
- Shoe has added material to support sash during transportation
- AAMA Commercial Grade



25% MORE ADJUSTABILITY

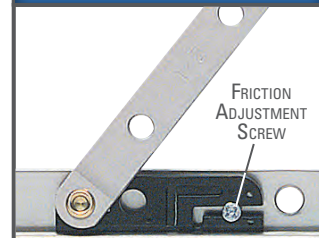
Adjustability - Option 1



Adjustability - Option 2



Easy Installation



Accessible Adjustability



Shoe Supports Arm



Commercial Grade



STAINLESS STEEL PROTECTION

- Premium Coastal Grade *Stainless as Standard*
- No red rust. No paint on steel components to wear off, chip, peel or scratch
- Smooth low wear joint connections
- Cuts SKU's virtually in half versus having a special "Coastal Program"
- Stainless parts are factory friendly for bulk handling

ENGINEERED FOR PERFORMANCE

- Tested to commercial grade hardware load test on 36" x 80", 119 lb. window
- Shoe has integral support block area to prevent arm bend during shipping
- Brass rivets used to add lubricity in high-wear joint areas
- Arms attach to track with the push of a slide clip for added safety
- An additional screw hole to accomodate a shoe blocking screw

DEVELOPED FOR MANUFACTURING

- Easy plug-and-play with industry standard mounting locations
- Track has an integral "Flare" to help lead shoe into track
- Track has large weld relief allowance to minimize weld cleaning time
- Detailed sizing charts available to dial in performance and reduce SKU's

FEATURES FOR INSTALLERS

- Casement hinge adjusts .078" both directions (25% more than competition) to perfect sash alignment
- Can be adjusted by using either a custom flat wrench or a standard 7/64" Allen wrench
- Awning Hinges are provided with 2" long shoe with offset friction adjustment screw for easy access



AWNING HINGE
(10", 14", 18" & 22")

PREMIUM VISUALS

- Fold-down and nesting visuals are standard to allow clearance for blinds and shutters
- Removable visuals reduce inventory costs and allow for easy customization
- Aesthetic underside allows hardware to look good from any angle
- Visual packages are available in all common powder coat colors as well as premium plated finishes
- Both handle and cover options shown can be used on same operator system interchangeably
- Product is delivered in individual printed compartment bags, bar coded – to help ensure proper selection and order fulfillment

EVOLUTIONS™

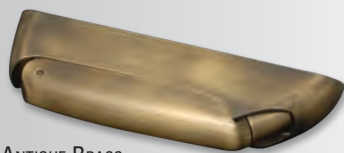


EXPRESSIONS™



PREMIUM FINISHES

- Available in both Expressions and Evolutions styles. Evolutions pictured below.



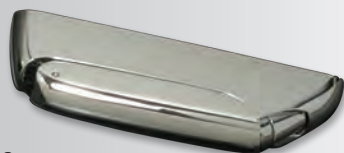
ANTIQUE BRASS



BRASS



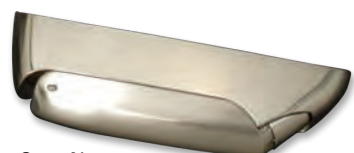
BRONZE



CHROME



SATIN CHROME



SATIN NICKEL



SNUBBERS



CONCEALED SNUBBER — Item #WCS1601S1

- Fits into the hinge track portion of the window system between the two hinges
- This snubber is the standard small compression type
- Keeps sash in close proximity to the frame and helps weather seal compression
- Main uses are in sash / frame combinations that have no internal reinforcement



CONCEALED ANGLED SNUBBER — Item #WCS1604S1

- Fits into the hinge track portion of the window system between the two hinges
- This snubber is specifically designed to tighten the sash to the frame under high window loads
- Pulls the sash into the frame as wind-loads increase
- Main uses are in sash / frame combinations that have internal reinforcement or are otherwise less flexible



CONCEALED INTERLOCKING SNUBBER — Item #WCS16012S1

- Fits into the hinge track portion of the window system between the two hinges
- This snubber is specifically designed to grab and hold sash from rotating out during the cycling portion of coastal impact certification testing
- The version shown is intended for use and mounting into the hinge screw bosses of a profile



CONCEALED INTERLOCKING HIGH IMPACT CASEMENT SNUBBER— Item #1920098

- Fits into the hinge track portion of the window system between the two hinges
- This snubber is specifically designed to grab and hold sash from rotating out during the cycling portion of coastal impact certification testing
- The version shown is intended for use and mounting while locating off a sash and frame wall



2" Compression SNUBBER — Item #1920096

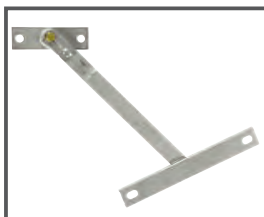
- Fits into the sash / frame pocket where the lock is designed to fit, but between the two hinges
- This snubber is designed to aid in compressing the sash into the frame to help ensure proper weather strip contact
- If higher air / water ratings are needed without reinforcement in the sash, this one can be used along with concealed versions

ACCESSORIES

- Accessories are add-on parts that may be helpful in manufacturing, testing or servicing
- Special application may be required, see Tech Sheets for suggestions
- Stainless steel where it matters



7/16" RAMP
Item #11780352



SASH LIMITER
Item #WSLD200SET



**HINGE TRACK
ADJUSTMENT WRENCH**
Item #WCHWRENCH



Ashland Hardware systems is proud to offer the window industry a premier line of casement operators to meet the needs of window manufacturers, offer significant marketable benefits, and provide manufacturing ease.....all in a coastal stainless steel as standard platform.

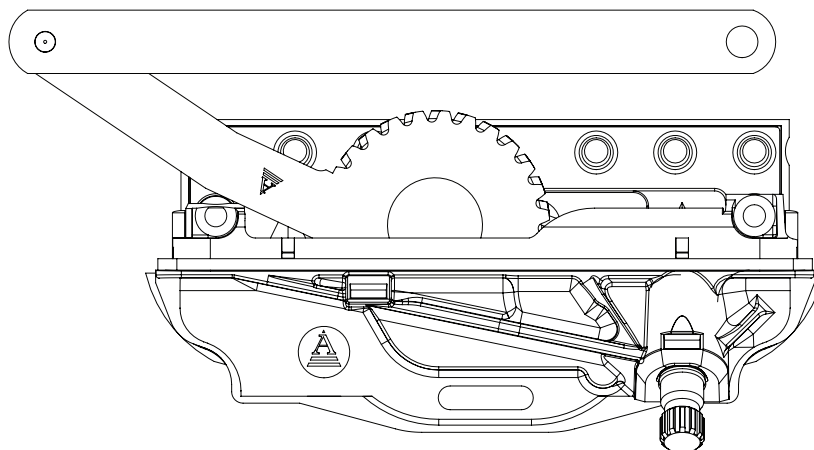
The information below is offered as a guideline to cover common industry applications. The many unique features of casement sash and frame will need to be accommodated by some adjustments to the following dimensions and part number data, a full detailed application review is encouraged.

ASHLAND OPTIMA™ APPLICATION DETAILS

All data shown in the following technical pages is for typical window applications. Changing window sash or frame sizes or moving operator route locations will change some of the parameters shown that are needed to make a good functioning window.

DYAD OPERATORS

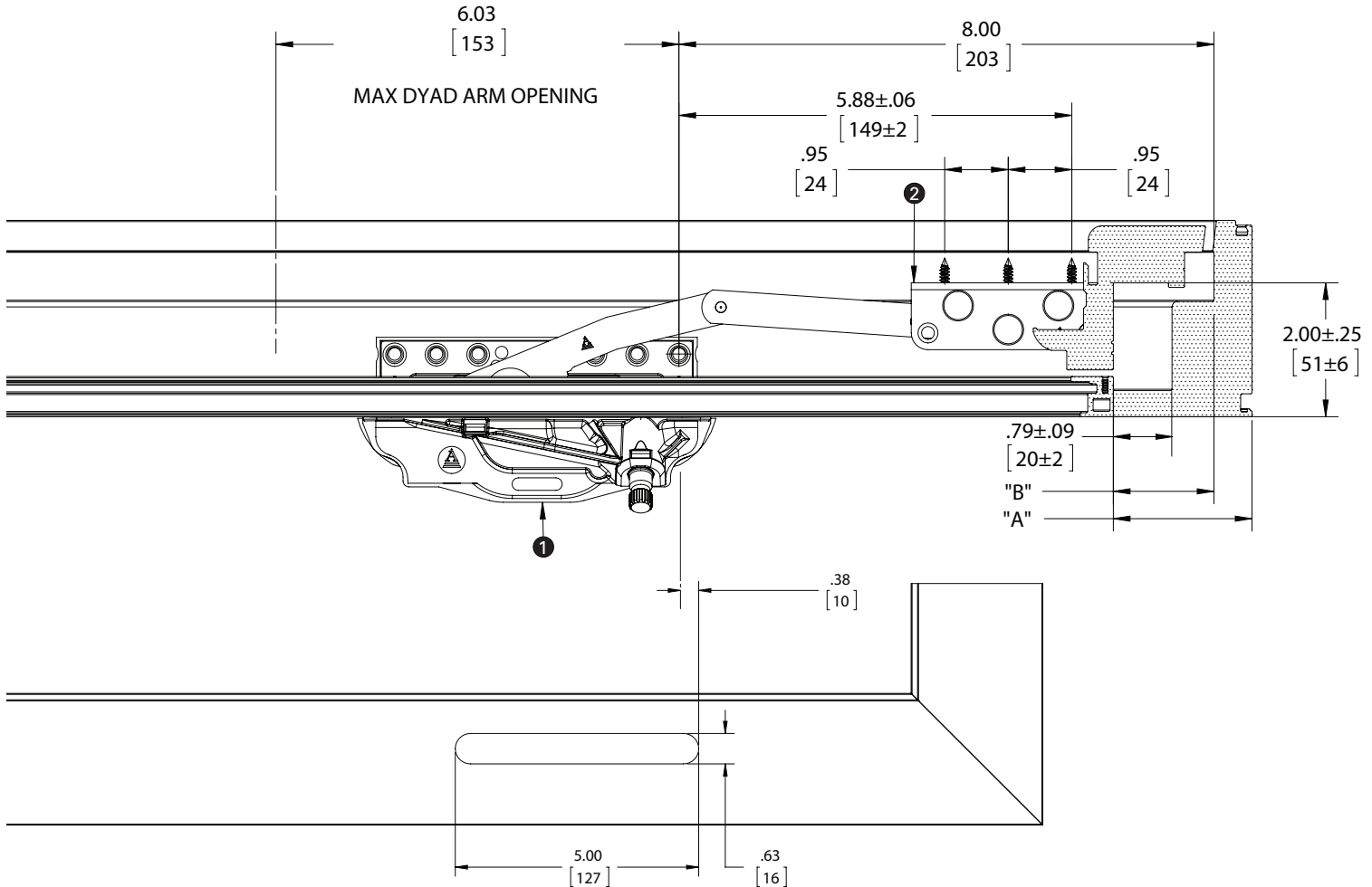
Standard Dyad Operators are designed to be used on windows between 15 ½" [393 mm] wide up to 24" [609 mm] wide. Short Dyads are designed to fit application between 15" [381 mm] and 16" [406 mm] ; however, the operator route will have to move closer to the hinge side of the window. Below 15" [381 mm] Ashland recommends the use of a Reverse Dyad configuration. All dyad operators work with the sash bracket shown on the following pages.



Order Number	Product Number	Description
1913940	W1497-500	Dyad Casement Operator LH
1913956	W1497-600	Dyad Casement Operator RH
1913991	W1497-510	Short Dyad Casement Operator LH
1913957	W1497-610	Short Dyad Casement Operator RH

Note: With the Ashland Optima operator Dyad series, there is no need for a special "reverse Dyad." See applications on next pages.

WINDOW SIZES 15 1/2" [393 mm] TO 24" [609 mm]— TYPICAL STANDARD DYAD OPERATOR APPLICATION



FORMULA FOR SASH BRACKET PLACEMENT:

$$"C" = 8.00 - 5.88 - "B"$$

DIMENSION DEFINITIONS:

"A": SASH AT OPERATOR POCKET TO OUTER WALL OF FRAME (EX. NAIL FLANGE)

"B": SASH AT OPERATOR POCKET TO FRAME AT HINGE POCKET

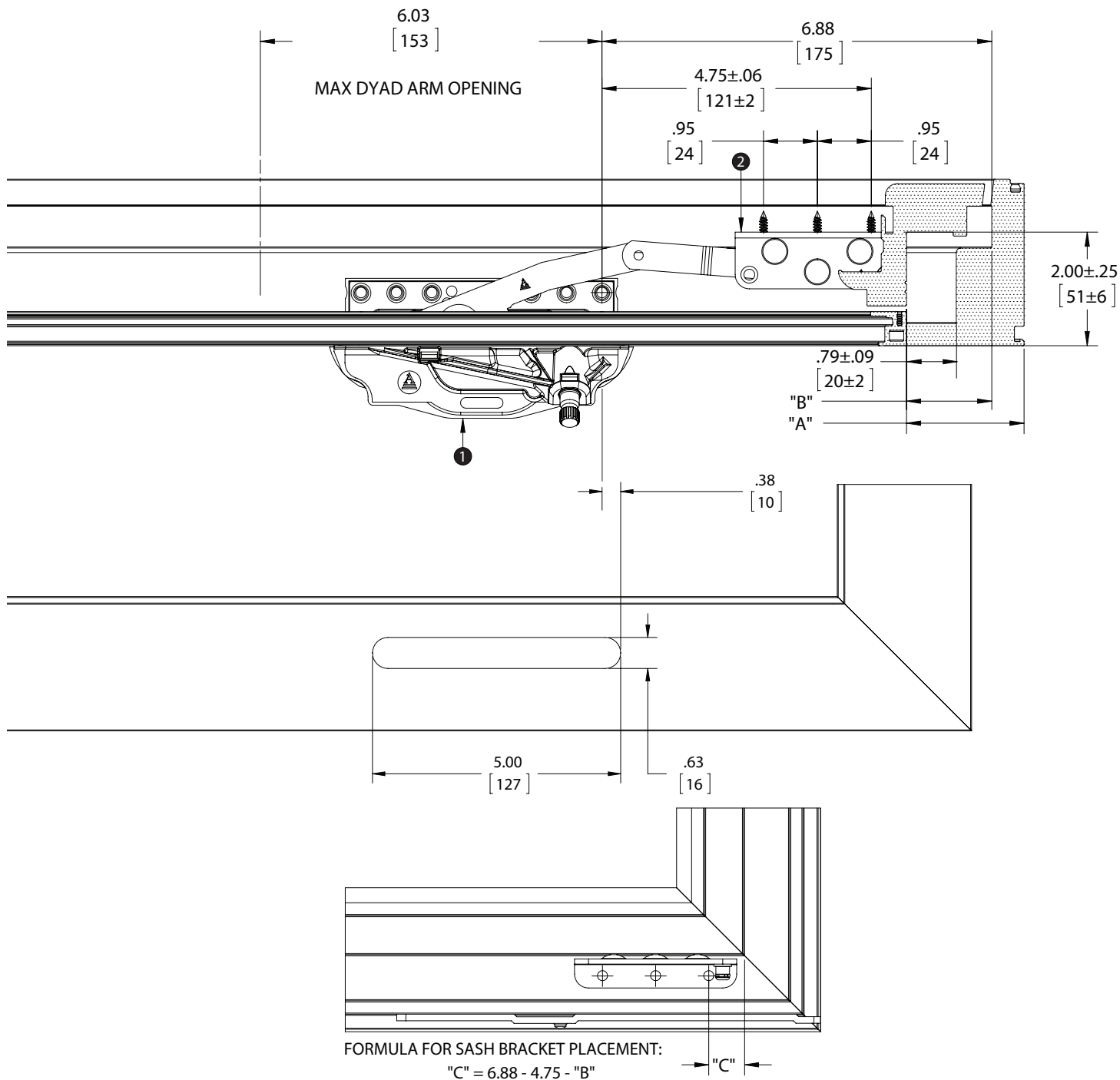
"C": SASH BRACKET FIRST HOLE TO SASH EDGE AS SHOWN

Hardware Shown		
Order Number	Product Number	Description
1 1913940	W1497-500	Dyad Casement Operator LH
2 1920105	W1496-189	SST Bracket, LH with Locating Boss

Recommended Fasteners ⁽¹⁾	Hardware Component
#8 x 3/4" SS Phillips Pan Head	Sash Bracket
#8 x 3/4" SS Phillips Flat Head	Operator

Note: All dimensions in [] are metric

WINDOW SIZES 15" [381 mm] MINIMUM – TYPICAL STANDARD SHORT DYAD OPERATOR APPLICATION

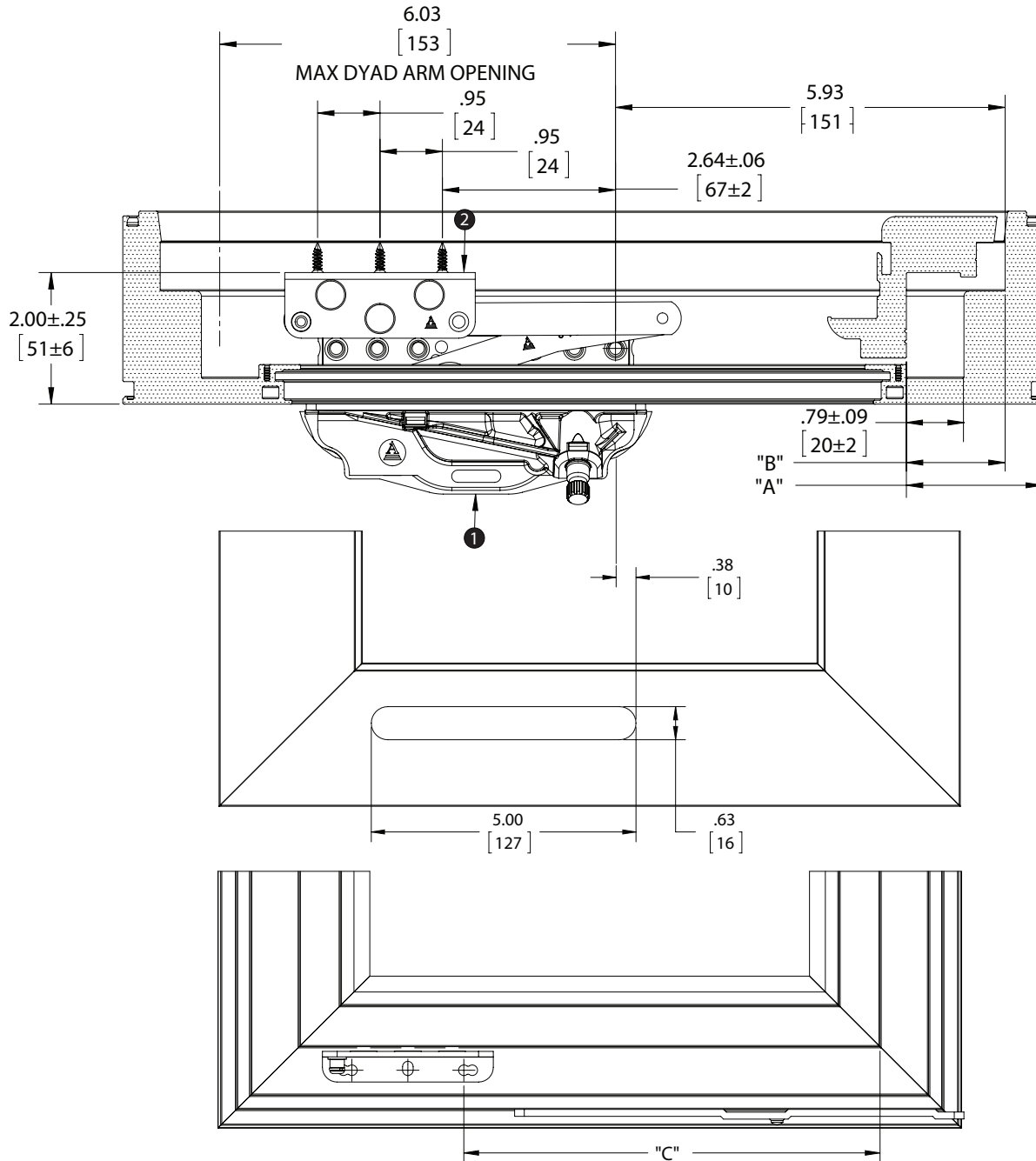


Note 1 - Review Application layout to ensure screws will extend fully through a minimum of 2 walls of vinyl.

Hardware Shown		
Order Number	Product Number	Description
1 1913991	W1497-510	Short Dyad Casement Operator LH
2 1920105	W1496-189	SST Bracket, LH with Locating Boss

Recommended Fasteners ⁽¹⁾	Hardware Component
#8 x 3/4" SS Phillips Pan Head	Sash Bracket
#8 x 3/4" SS Phillips Flat Head	Operator

WINDOW SIZES 13 1/2" [343 mm] MINIMUM – TYPICAL STANDARD DYAD OPERATOR REVERSE CONFIGURATION APPLICATION



FORMULA FOR SASH BRACKET PLACEMENT:

$$"C" = 5.93 - "B" + 2.64$$

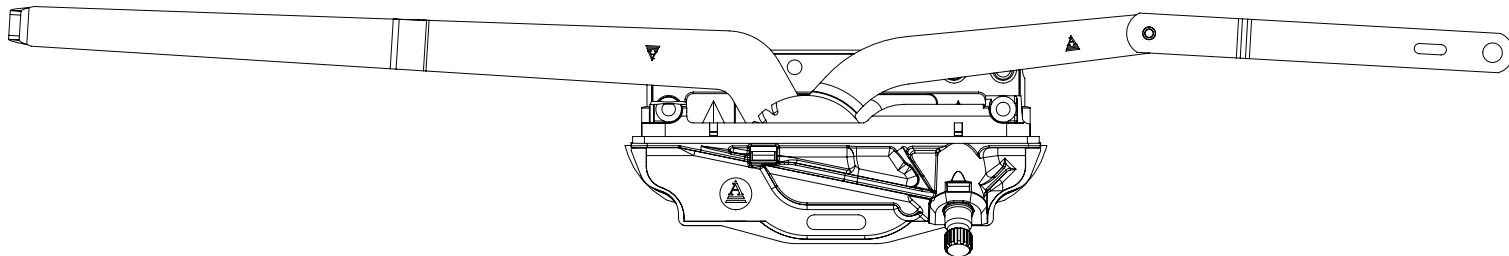
Hardware Shown		
Order Number	Product Number	Description
1 1913940	W1497-500	Dyad Casement Operator LH
2 1920106	W1496-289	SST Bracket, RH with Locating Boss

Recommended Fasteners ⁽¹⁾	Hardware Component
#8 x 3/4" SS Phillips Pan Head	Sash Bracket
#8 x 3/4" SS Phillips Flat Head	Operator

Note: All dimensions in [] are metric

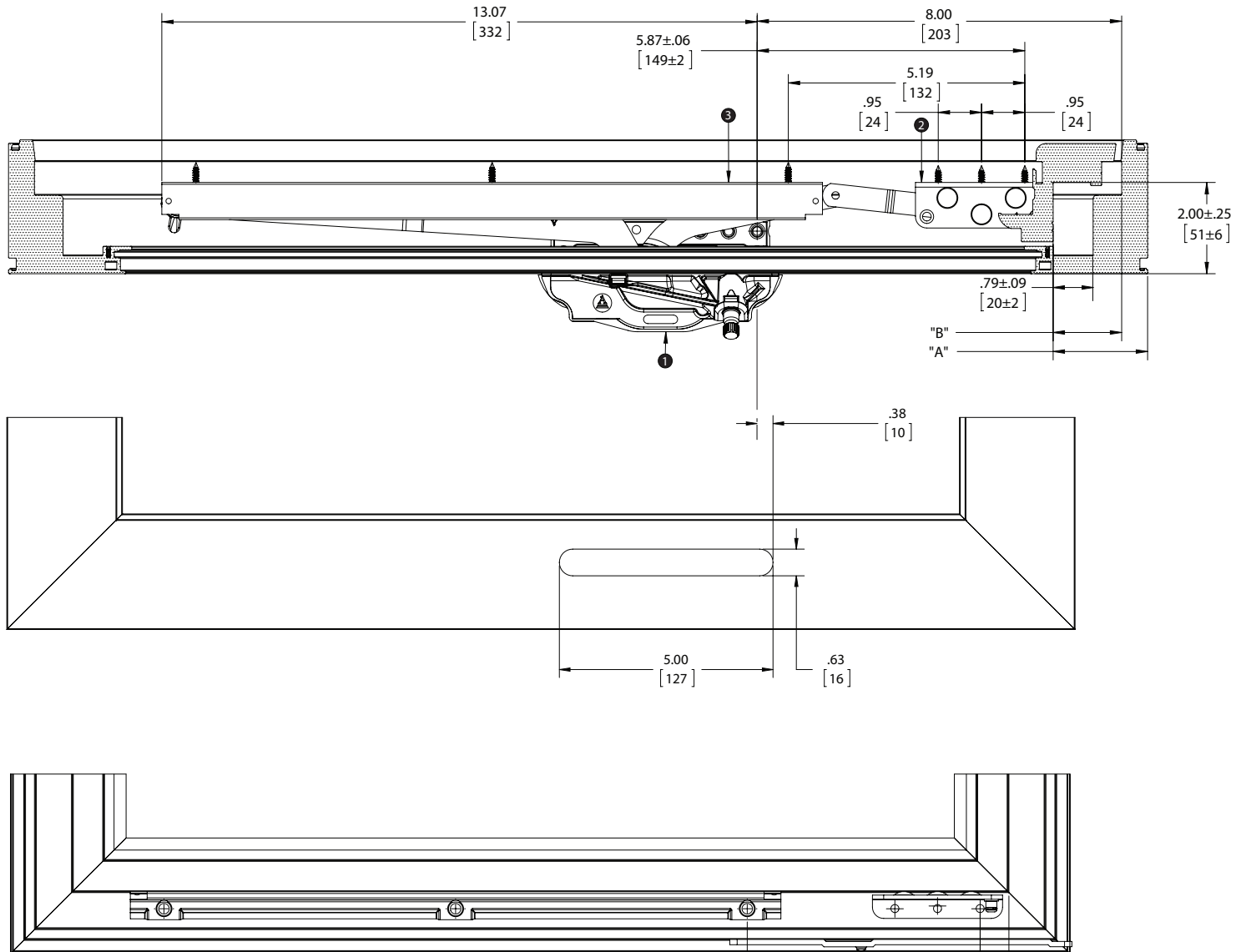
DUAL-ARM OPERATORS

Dual-Arm Operators are designed to work on windows from 24" [609 mm] in width up to 36" [914 mm] wide. It is used in conjunction with the sash bracket and track assembly shown on the following pages.



Order Number	Product Number	Description
1913934	W1497-100	LH Dual-Arm Casement Operator
1913933	W1497-200	RH Dual-Arm Casement Operator

WINDOW SIZES 24" [609 mm] TO 36" [914 mm] – TYPICAL STANDARD DUAL-ARM OPERATOR APPLICATION



DIMENSION DEFINITIONS:

"A": SASH AT OPERATOR POCKET TO OUTER WALL OF FRAME (EX. NAIL FLANGE)

"B": SASH AT OPERATOR POCKET TO FRAME AT HINGE POCKET

"C": SASH BRACKET FIRST HOLE TO SASH EDGE AS SHOWN

FORMULA FOR SASH BRACKET PLACEMENT:

$$"C" = 8.00 - 5.88 - "B"$$

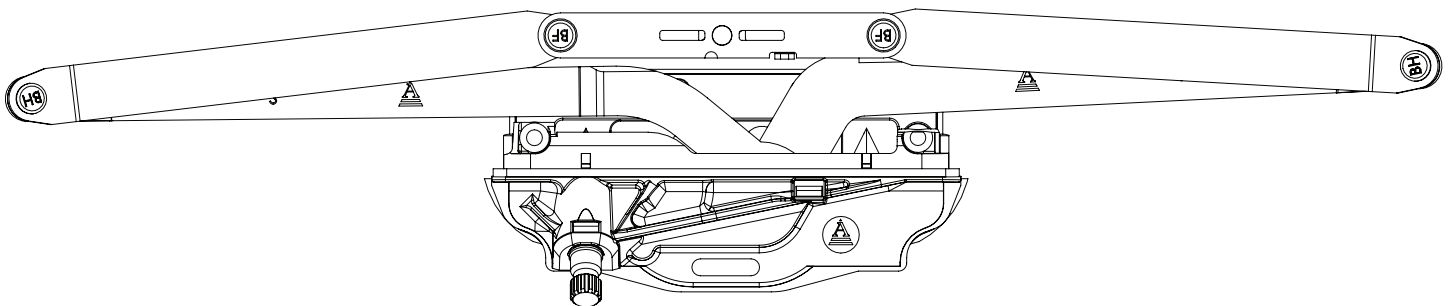
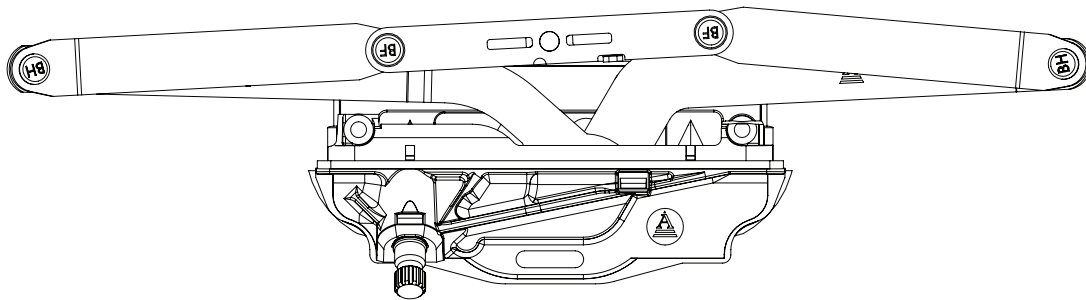
Hardware Shown		
Order Number	Product Number	Description
① 1913934	W1497-100	LH Dual-Arm Casement Operator
② 1920105	W1496-189	SST Bracket, LH with Locating Boss
③ 1920104	W1491-75A	SST Dual-Arm Track Assembly

Recommended Fasteners ⁽¹⁾	Hardware Component
#8 x 3/4" SS Phillips Pan Head	Sash Bracket
#8 x 3/4" SS Phillips Flat Head	Operator
#8 x 3/4" SS Phillips Flat Head	Dual-Arm Operator Track

Note: All dimensions in [] are metric

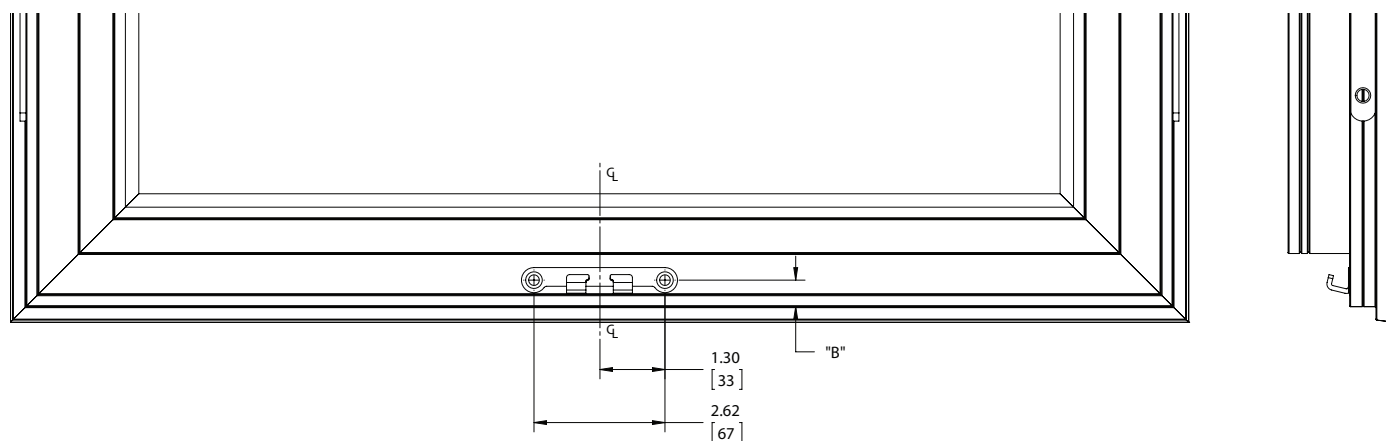
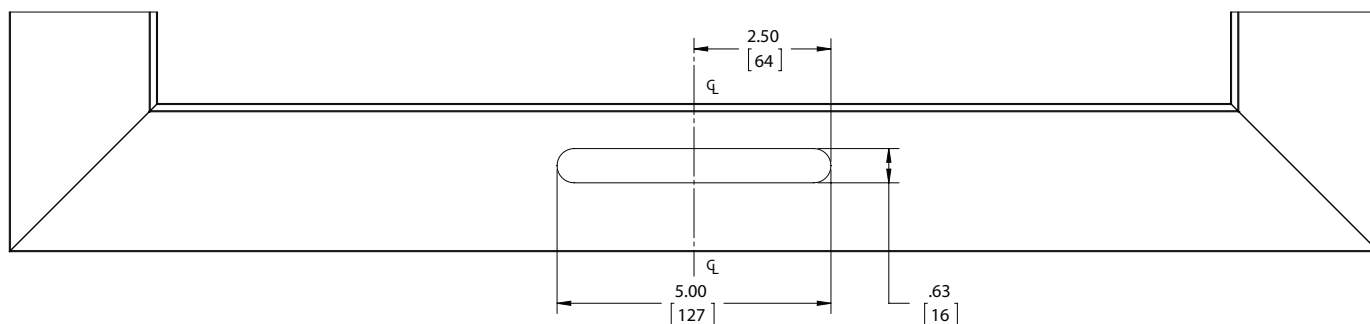
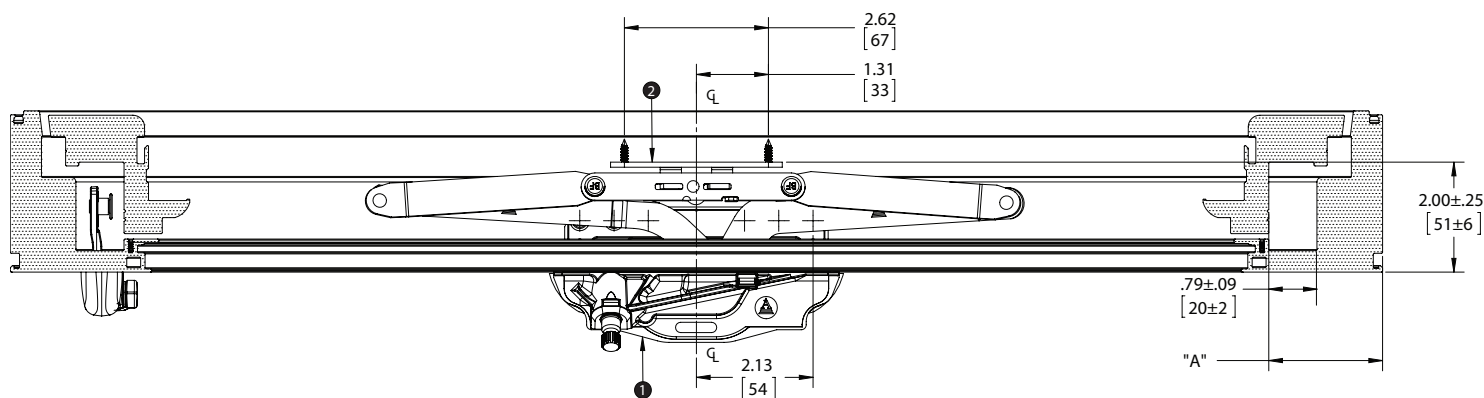
AWNING OPERATORS

The Ashland Awning operators are available in either a 12" [305 mm] or 16" [406 mm] width. This choice in operator size will be dependent on window frame profiles inside dimension plus clearance for arm movement. For higher DP ratings on non-reinforced sash, it is recommended that the 12" size be used.



Order Number	Product Number	Description
1920157	W1497-400	12" Awning Operator
1913937	W1497-410	16" Awning Operator

WINDOW SIZES 14" [356 mm] to 54" [1372 mm] – TYPICAL STANDARD AWNING OPERATOR APPLICATION



Hardware Shown		
Order Number	Product Number	Description
1 1920157	W1497-400	12" Awning Operator
2 W108154	W1081-54	Sash Bracket

Recommended Fasteners ⁽¹⁾	Hardware Component
#8 x 3/4" SS Phillips Pan Head	Sash Bracket
#8 x 3/4" SS Phillips Flat Head	Operator

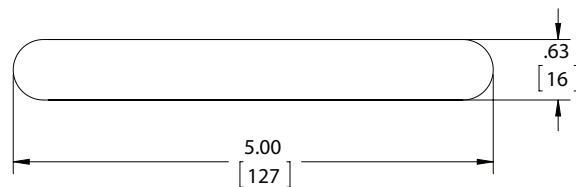
Note: All dimensions in [] are metric

FABRICATION HOLE AND MOUNTING IS COMMON TO ALL ASHLAND OPTIMA OPERATORS

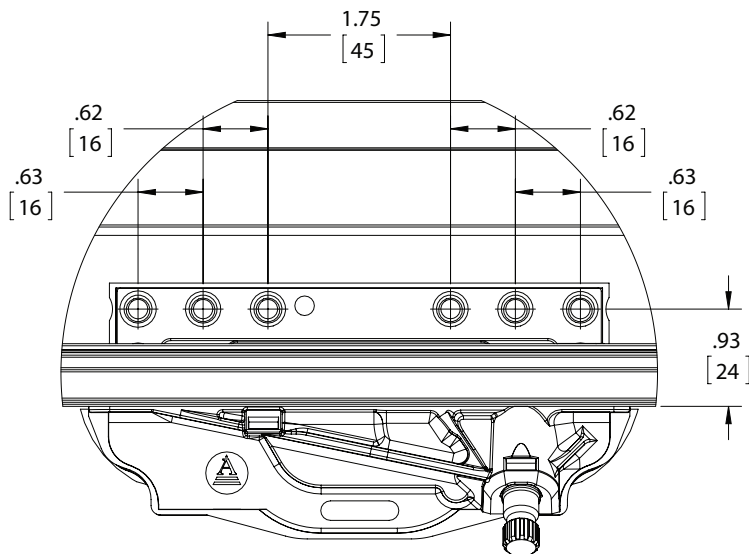
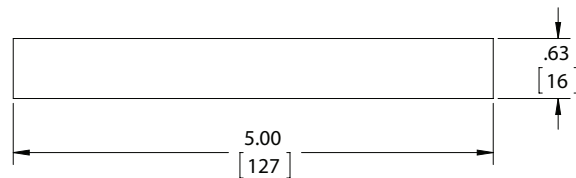
The Ashland Optima operator systems can accommodate two fabrication cut outs, either a punched hole, or a routed in slot will work. The following are the sizes recommended by Ashland to help create a tight seal, hold the operator in place during assembly, and allows easy snap-in attachment.

All Ashland Optima operators have the same operator base structure and utilize the same mounting pattern.

STANDARD ROUTE



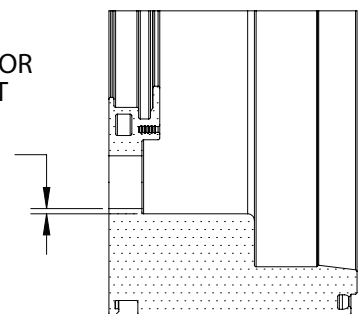
ALTERNATE ROUTE



DETAIL B
SCALE 1 : 1

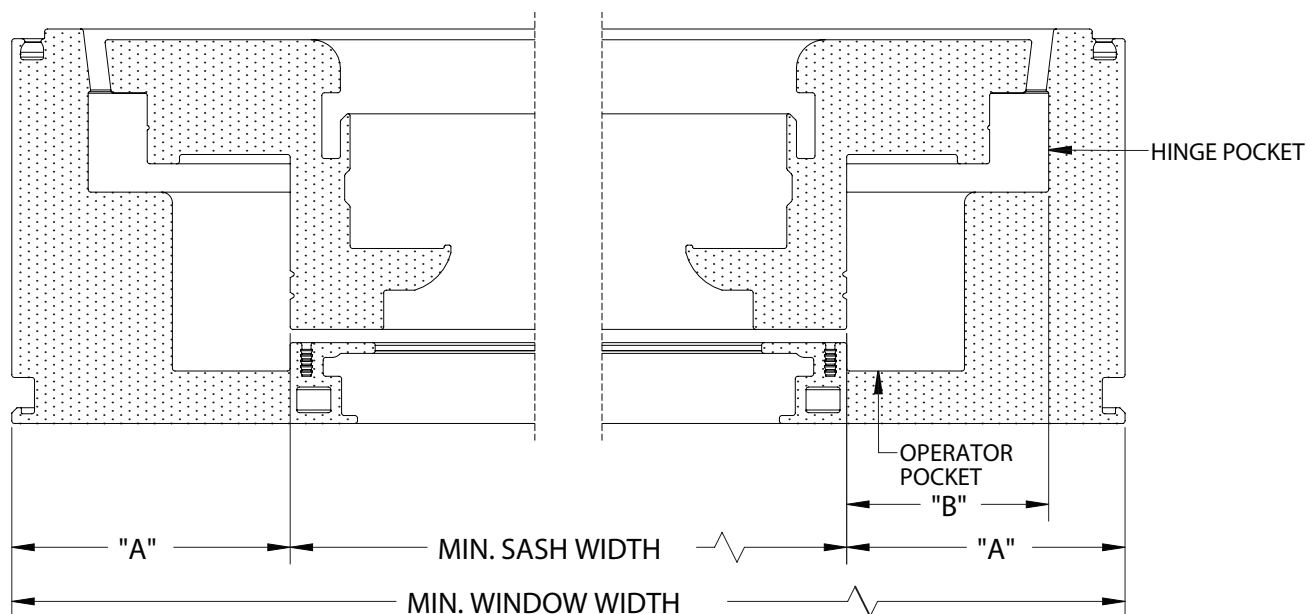
TO OPERATOR
CUT OUT

.06±.02
[2±1]



SECTION A-A
SCALE 1 : 1.5

STANDARD CASEMENT MINIMUM SIZE CHART

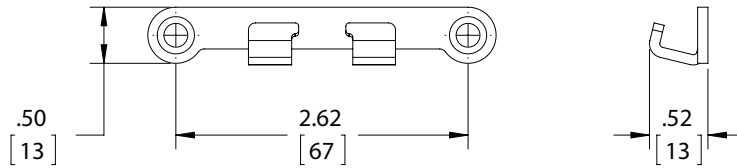


Minimum Window Width Per Standard Hardware Placement (in.)		
	Min. Sash Width	Min. Window Width
Dual-Arm	21.44" - B	21.44" - B + A x 2
Dyad	14.03" - B	14.03" - B + A x 2
Short Dyad	12.91" - B	12.91" - B + A x 2
Reverse Dyad	11.96" - B	11.96" - B + A x 2
Awning - 12"	12.00"	12.00" + A x 2
Awning - 16"	16.00"	16.00" + A x 2

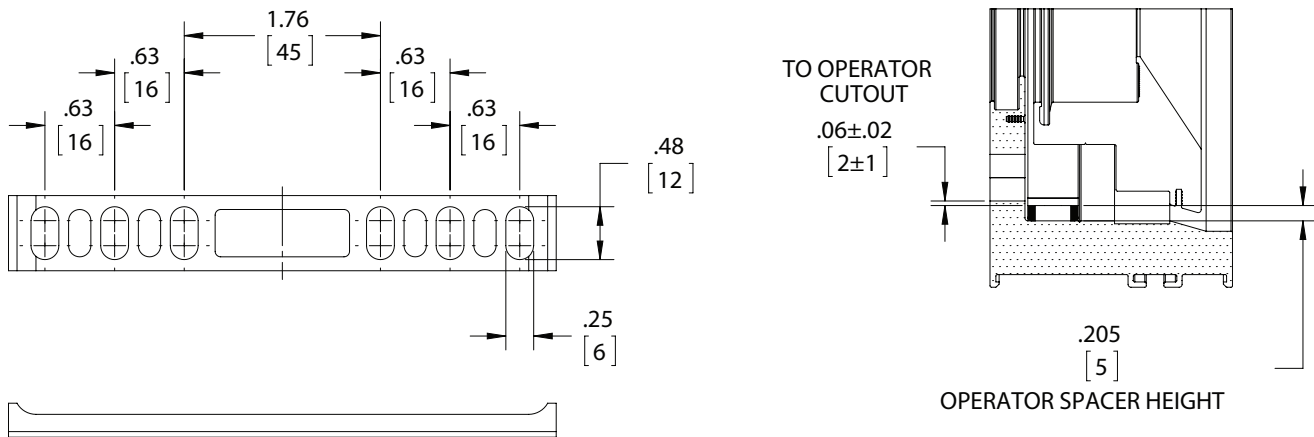
Minimum Window Width Per Standard Hardware Placement (mm)		
	Min. Sash Width	Min. Window Width
Dual-Arm	544.57 mm - B	544.57 mm - B + A x 2
Dyad	356.36 mm - B	356.36 mm - B + A x 2
Short Dyad	327.91 mm - B	327.91 mm - B + A x 2
Reverse Dyad	303.78 mm - B	303.78 mm - B + A x 2
Awning - 12"	304.80 mm	304.80 mm + A x 2
Awning - 16"	406.40 mm	406.40 mm + A x 2

Note: All dimensions in [] are metric

AWNING SASH BRACKET



OPERATOR SHIM



Order Number	Product Number	Description
1920104	W1491-75A	SST Dual- Arm Track Assembly
1920105	W1496-189	SST Bracket, LH with Locating Boss
1920106	W1496-289	SST Bracket, RH with Locating Boss
1920149	W1496-188	SST Bracket, LH
1920150	W1496-288	SST Bracket, RH
W108154	W1081-54	SST Awning Bracket
1920102	W1496-190	SST Bracket, LH with Vertical Mount
1920103	W1496-290	SST Bracket, RH with Vertical Mount
W149190P84	W1491-90P84	Operator Shim (as required by profile)



CASEMENT AND AWNING OPERATOR VISUALS

Ashland's Optima Operators are available with a wide selection of colors and metal finishes in two very distinct visual styles. Part numbers and descriptions are listed below. Orders need to be placed using the "Order Number".

EVOLUTIONS™

Order Number	Product Number	Description
1920023	W1490-700A-E3	LH VISUAL PACK - CHROME
1920024	W1490-700A-E4	LH VISUAL PACK - BRUSHED CHROME
1920025	W1490-700A-G9AG	LH VISUAL PACK - SATIN NICKEL
1920131	W1490-700A-KA11	LH VISUAL PACK - DRIFTWOOD
1920027	W1490-700A-KA2	LH VISUAL PACK - SAHARA BEIGE
1920028	W1490-700A-KA8	LH VISUAL PACK - DARK BRONZE
1920029	W1490-700A-KB1	LH VISUAL PACK - BLACK
1920030	W1490-700A-KH1	LH VISUAL PACK - CREAM WHITE
1920061	W1490-700A-KH12	LH VISUAL PACK - RICH BEIGE
1920062	W1490-700A-KH13	LH VISUAL PACK - BRONZE
1920063	W1490-700A-KH2	LH VISUAL PACK - TAN
1920064	W1490-700A-KH3	LH VISUAL PACK - BLUE WHITE
1920065	W1490-700A-KH4	LH VISUAL PACK - ASHLAND BEIGE
1920066	W1490-700A-KH5	LH VISUAL PACK - DARK BROWN
1920067	W1490-700A-KN4	LH VISUAL PACK - FAUX ORB
1920068	W1490-700A-KW1	LH VISUAL PACK - OFF WHITE
1920069	W1490-700A-KW4	LH VISUAL PACK - COLONIAL WHITE
1920070	W1490-700A-KW7	LH VISUAL PACK - AHS WHITE
1920071	W1490-700A-KY6	LH VISUAL PACK - PONTIAC GOLD
1920072	W1490-700A-O27M	LH VISUAL PACK - ANTIQUE BRASS
1920073	W1490-700A-O3	LH VISUAL PACK - POLISHED BRASS
1920074	W1490-800A-E3	RH VISUAL PACK - CHROME
1920075	W1490-800A-E4	RH VISUAL PACK - BRUSHED CHROME
1920076	W1490-800A-G9AG	RH VISUAL PACK - SATIN NICKEL
1920132	W1490-800A-KA11	RH VISUAL PACK - DRIFTWOOD
1920078	W1490-800A-KA2	RH VISUAL PACK - SAHARA BEIGE
1920079	W1490-800A-KA8	RH VISUAL PACK - DARK BRONZE
1920080	W1490-800A-KB1	RH VISUAL PACK - BLACK
1920081	W1490-800A-KH1	RH VISUAL PACK - CREAM WHITE
1920082	W1490-800A-KH12	RH VISUAL PACK - RICH BEIGE
1920084	W1490-800A-KH13	RH VISUAL PACK - BRONZE
1920085	W1490-800A-KH2	RH VISUAL PACK - TAN
1920086	W1490-800A-KH3	RH VISUAL PACK - BLUE WHITE
1920087	W1490-800A-KH4	RH VISUAL PACK - ASHLAND BEIGE
1920088	W1490-800A-KH5	RH VISUAL PACK - DARK BROWN
1920089	W1490-800A-KN4	RH VISUAL PACK - FAUX ORB
1920090	W1490-800A-KW1	RH VISUAL PACK - OFF WHITE
1920091	W1490-800A-KW4	RH VISUAL PACK - COLONIAL WHITE
1920092	W1490-800A-KW7	RH VISUAL PACK - AHS WHITE
1920093	W1490-800A-KY6	RH VISUAL PACK - PONTIAC GOLD
1920094	W1490-800A-O27M	RH VISUAL PACK - ANTIQUE BRASS
1920095	W1490-800A-O3	RH VISUAL PACK - POLISHED BRASS



EXPRESSIONS™

Order Number	Product Number	Description
1920133	W1496-700-D4	LH VISUAL PACK - HIGHLIGHTED ORB
1918292	W1496-700-E3	LH VISUAL PACK - CHROME
1918294	W1496-700-E4	LH VISUAL PACK - BRUSHED CHROME
1918295	W1496-700-G9AG	LH VISUAL PACK - SATIN NICKEL
1920128	W1496-700-KA11	LH VISUAL PACK - DRIFTWOOD
1918297	W1496-700-KA2	LH VISUAL PACK - SAHARA BEIGE
1918298	W1496-700-KA8	LH VISUAL PACK - DARK BRONZE
1918299	W1496-700-KB1	LH VISUAL PACK - BLACK
1918300	W1496-700-KH1	LH VISUAL PACK - AHS WHITE
1918401	W1496-700-KH12	LH VISUAL PACK - RICH BEIGE
1918402	W1496-700-KH13	LH VISUAL PACK - BRONZE
1918403	W1496-700-KH2	LH VISUAL PACK - TAN
1918404	W1496-700-KH3	LH VISUAL PACK - BLUE WHITE
1918405	W1496-700-KH4	LH VISUAL PACK - BEIGE
1918406	W1496-700-KH5	LH VISUAL PACK - DARK BROWN
1918407	W1496-700-KN4	LH VISUAL PACK - FAUX ORB
1918408	W1496-700-KW1	LH VISUAL PACK - OFF WHITE
1918409	W1496-700-KW4	LH VISUAL PACK - COLONIAL WHITE
1918410	W1496-700-KW7	LH VISUAL PACK - ASHLAND WHITE
1918411	W1496-700-KY6	LH VISUAL PACK - PONTIAC GOLD
1918412	W1496-700-O27M	LH VISUAL PACK - ANTIQUE BRASS
1918413	W1496-700-O3	LH VISUAL PACK - POLISHED BRASS
1920134	W1496-800-D4	RH VISUAL PACK - HIGHLIGHTED ORB
1918414	W1496-800-E3	RH VISUAL PACK - CHROME
1918415	W1496-800-E4	RH VISUAL PACK - BRUSHED CHROME
1918416	W1496-800-G9AG	RH VISUAL PACK - SATIN NICKEL
1920129	W1496-800-KA11	RH VISUAL PACK - DRIFTWOOD
1918418	W1496-800-KA2	RH VISUAL PACK - SAHARA BEIGE
1918419	W1496-800-KA8	RH VISUAL PACK - DARK BRONZE
1918420	W1496-800-KB1	RH VISUAL PACK - BLACK
1918421	W1496-800-KH1	RH VISUAL PACK - AHS WHITE
1918422	W1496-800-KH12	RH VISUAL PACK - RICH BEIGE
1918423	W1496-800-KH13	RH VISUAL PACK - BRONZE
1918424	W1496-800-KH2	RH VISUAL PACK - TAN
1918425	W1496-800-KH3	RH VISUAL PACK - BLUE WHITE
1918426	W1496-800-KH4	RH VISUAL PACK - BEIGE
1918427	W1496-800-KH5	RH VISUAL PACK - DARK BROWN
1918429	W1496-800-KN4	RH VISUAL PACK - FAUX ORB
1918430	W1496-800-KW1	RH VISUAL PACK - OFF WHITE
1918431	W1496-800-KW4	RH VISUAL PACK - COLONIAL WHITE
1918432	W1496-800-KW7	RH VISUAL PACK - ASHLAND WHITE
1918433	W1496-800-KY6	RH VISUAL PACK - PONTIAC GOLD
1918434	W1496-800-O27M	RH VISUAL PACK - ANTIQUE BRASS
1918435	W1496-800-O3	RH VISUAL PACK - POLISHED BRASS





CASEMENT AND AWNING HINGES

The Ashland Casement and Awning Hinge series continues the Casement Product Category with all coastal stainless steel as standard. All hinges are shipped with the arms separate from the tracks. In the charts below, there are part numbers for each to be ordered separately.

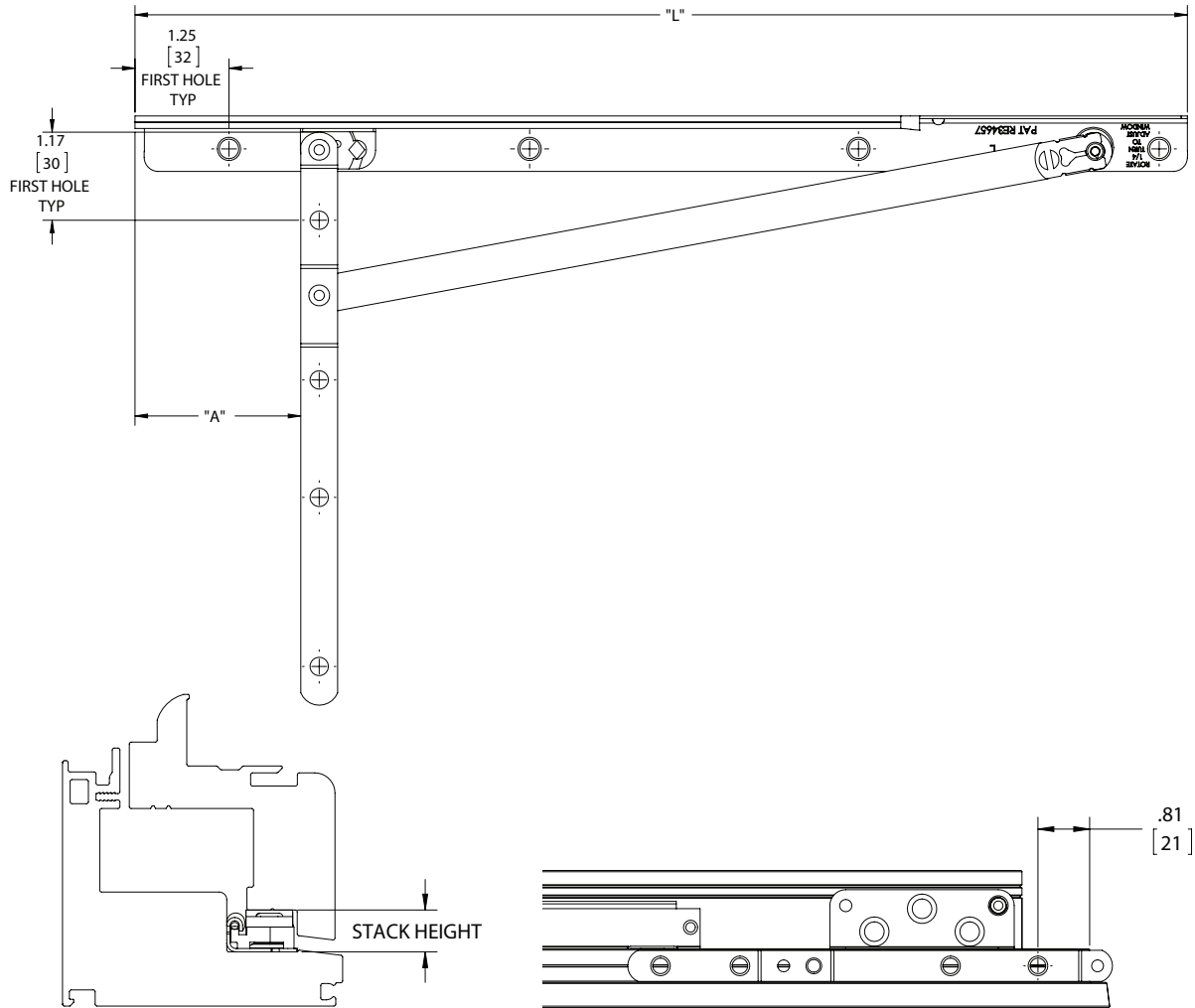
Casement hinges are used with the “Adjustable Tracks” to aid in field service and installation. The hinge arms are attached to the track with a sliding clip to secure the arm. These are available in either a standard 7/16" [11.2 mm] stack height or a 1/2" [12.7 mm] stack height. The 7/16" [11.2 mm] is the typical industry standard, but some applications can benefit from the 1/2" [12.7 mm] stack hinge if there are problems with weather strip drag or cutting of the outer fin seal when opening and closing.

Awning hinges are also available in the 7/16" [11.2 mm] and 1/2" [12.7 mm] Stack Height. They vary in length to help balance the sash when open. A hinge that is too small for a given sash will allow the sash to close by itself. A hinge that is too large for a given sash will allow the sash to open on its own. Awning operators may be affected by this extra weight or force to hold the sash open. If the sash isn't balanced well, operator life cycle may be reduced. Also, if the awning operator develops a “chatter” upon opening or closing, then the hinge is the wrong size for the sash.

GENERAL NOTES AND RECOMMENDATIONS

- When determining the size of a casement window, the width of the window sash should be no more than 33% of the sash height in order to help prevent excessive sash sag over time.
- For vinyl window applications, fastening screws should penetrate through at least 2 walls of vinyl or anchor into an engineered screw boss.
- All hinge tracks for casement and awning hinges are mounted with #7 undercut head screws to maximize thread engagement and allow the hinge arm shoe to easily pass by.
- To avoid unnecessary advanced corroding of hardware, use high corrosion resistant stainless steel screws.
- As an aid to supporting the pressure on the hinge during pressure testing, Ashland recommends utilizing the snubbers shown in the lock section of this tech sheet along the height of the hinge side of the window sash and frame.

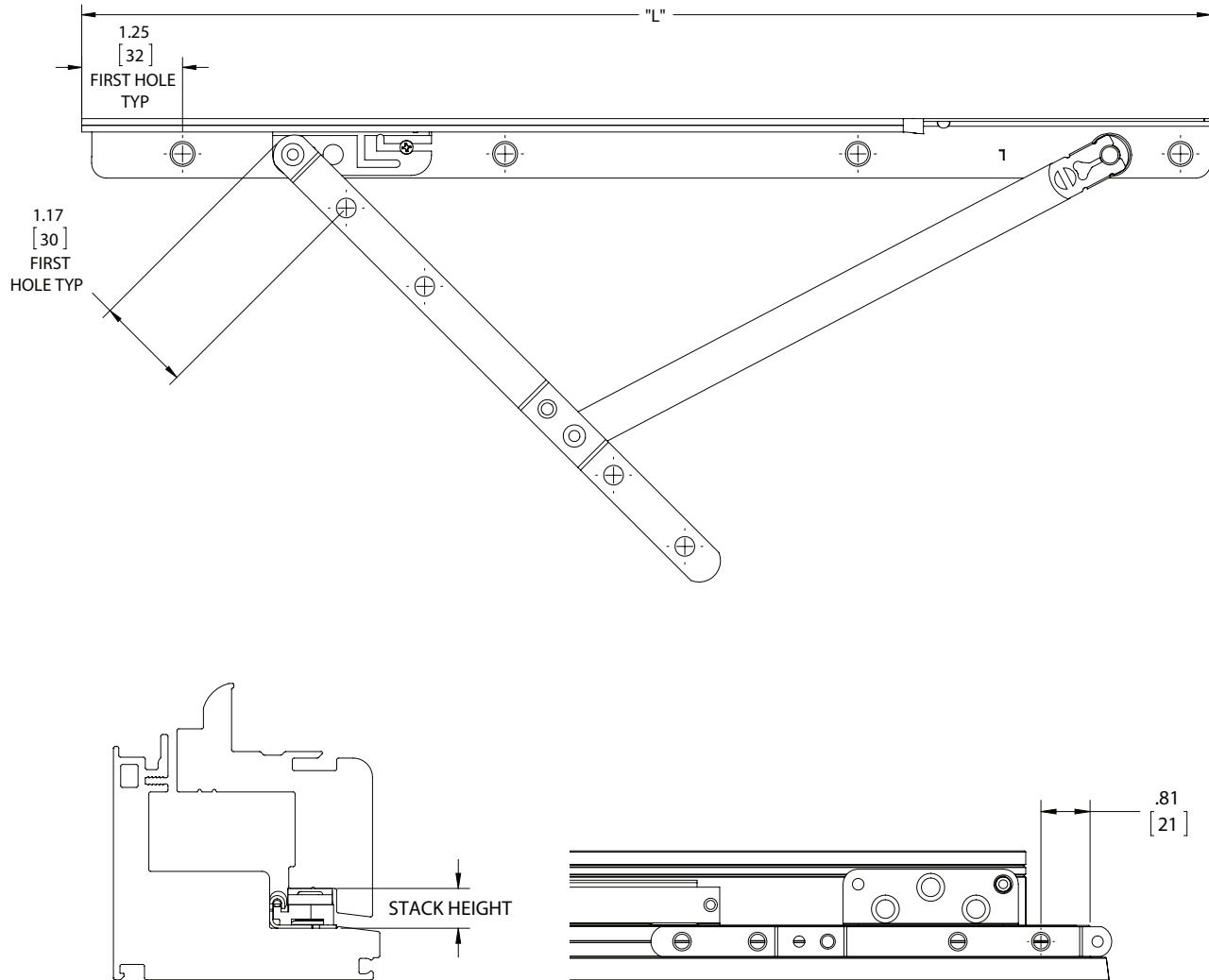
CASEMENT HINGE APPLICATION INFORMATION



Hinge Arms				Adjustable Tracks			Dimensions				
Order No.	Part No.	Description	Hinge Stack Ht.	Order No.	Part No.	Description	"A" in.	"A" mm	Opening	"L" in.	"L" mm
WSHA20010L0	WSHA200-10L0	10" Standard, LH	7/16" [11.2mm]	WCHT00110LA	WCHT001-10LA	10" Track Assembly, LH, Adjustable	4.869	123.7	94°	10	254
WSHA20010R0	WSHA200-10R0	10" Standard, RH	7/16" [11.2mm]	WCHT00110RA	WCHT001-10RA	10" Track Assembly, RH, Adjustable	4.869	123.7	94°	10	254
WWHA20010R0	WWHA200-10R0	10" Wash, LH	7/16" [11.2mm]	WCHT00110LA	WCHT001-10LA	10" Track Assembly, LH, Adjustable	5.437	138.1	90°	10	254
WWHA20010L0	WWHA200-10L0	10" Wash, RH	7/16" [11.2mm]	WCHT00110RA	WCHT001-10RA	10" Track Assembly, RH, Adjustable	5.437	138.1	90°	10	254
WEHA20010L0	WEHA200-10L0	10" Egress, LH	7/16" [11.2mm]	WCHT00110LA	WCHT001-10LA	10" Track Assembly, LH, Adjustable	2.295	58.3	90°	10	254
WEHA20010R0	WEHA200-10R0	10" Egress, RH	7/16" [11.2mm]	WCHT00110RA	WCHT001-10RA	10" Track Assembly, RH, Adjustable	2.295	58.3	90°	10	254
WWHA20014L0	WWHA200-14L0	14" Wash, LH	7/16" [11.2mm]	WCHT00114LA	WCHT001-14LA	14" Track Assembly, LH, Adjustable	6.566	166.8	90°	14	355.6
WWHA20014R0	WWHA200-14R0	14" Wash, RH	7/16" [11.2mm]	WCHT00114RA	WCHT001-14RA	14" Track Assembly, RH, Adjustable	6.566	166.8	90°	14	355.6
WEHA20014L0	WEHA200-14L0	14" Egress, LH	7/16" [11.2mm]	WCHT00114LA	WCHT001-14-LA	14" Track Assembly, LH, Adjustable	2.234	56.7	90°	14	355.6
WEHA20014R0	WEHA200-14R0	14" Egress, RH	7/16" [11.2mm]	WCHT00114RA	WCHT001-14-RA	14" Track Assembly, RH, Adjustable	2.234	56.7	90°	14	355.6
WWHA21514L0	WWHA215-14L0	14" Wash, LH	1/2" [12.7mm]	WCHT00114LA	WCHT001-14LA	14" Track Assembly, LH, Adjustable	6.566	166.8	90°	14	355.6
WWHA21514R0	WWHA215-14R0	14" Wash, RH	1/2" [12.7mm]	WCHT00114RA	WCHT001-14RA	14" Track Assembly, RH, Adjustable	6.566	166.8	90°	14	355.6
WEHA21514L0	WEHA215-14L0	14" Egress, LH	1/2" [12.7mm]	WCHT00114LA	WCHT001-14-LA	14" Track Assembly, LH, Adjustable	2.234	56.7	90°	14	355.6
WEHA21514R0	WEHA215-14R0	14" Egress, RH	1/2" [12.7mm]	WCHT00114RA	WCHT001-14-RA	14" Track Assembly, RH, Adjustable	2.234	56.7	90°	14	355.6

Note: All dimensions in [] are metric

AWNING HINGE APPLICATION INFORMATION



	Recommended Window Size Range (in.)	Recommended Window Size Range (mm)
10" Hinge Assembly	12 - 16	305 - 407
14" Hinge Assembly	16 - 24	407 - 610
18" Hinge Assembly	24 - 38	610 - 966
22" Hinge Assembly	38 - 48	966 - 1220

Note: These are outside frame heights

Awning Hinge Arms				Awning Tracks			Dimensions	
Order No.	Part No.	Description	Hinge Stack Ht.	Order No.	Part No.	Description	"L" in.	"L" mm
WAHA40010L0	WAHA400-10L0	10" Arm Assy, Awning	7/16" [11.2mm]	WCHT00110LN	WCHT001-10LN	10" Track Assy, non-adjustable	10	254
WAHA40010R0	WAHA400-10R0	10" Arm Assy, Awning	7/16" [11.2mm]	WCHT00110RN	WCHT001-10RN	10" Track Assy, non-adjustable	10	254
WAHA40014L0	WAHA400-14L0	14" Arm Assy, Awning	7/16" [11.2mm]	WCHT00114LN	WCHT001-14LN	14" Track Assy, non-adjustable	14	356
WAHA40014R0	WAHA400-14R0	14" Arm Assy, Awning	7/16" [11.2mm]	WCHT00114RN	WCHT001-14RN	14" Track Assy, non-adjustable	14	356
WAHA40018L0	WAHA400-18L0	18" Arm Assy, Awning	7/16" [11.2mm]	WAHT00118LN	WAHT001-18LN	18" Track Assy, non-adjustable	18	457
WAHA40018R0	WAHA400-18R0	18" Arm Assy, Awning	7/16" [11.2mm]	WAHT00118RN	WAHT001-18RN	18" Track Assy, non-adjustable	18	457
WAHA40022L0	WAHA400-22L0	22" Arm Assy, Awning	7/16" [11.2mm]	WAHT00122LN	WAHT001-22LN	22" Track Assy, non-adjustable	22	559
WAHA40022R0	WAHA400-22R0	22" Arm Assy, Awning	7/16" [11.2mm]	WAHT00122RN	WAHT001-22RN	22" Track Assy, non-adjustable	22	559
WAHA41510L0	WAHA415-10L0	10" Arm Assy, Awning	1/2" [12.7mm]	WCHT00110LN	WCHT001-10LN	10" Track Assy, non-adjustable	10	254
WAHA41510R0	WAHA415-10R0	10" Arm Assy, Awning	1/2" [12.7mm]	WCHT00110RN	WCHT001-10RN	10" Track Assy, non-adjustable	10	254
WAHA41514L0	WAHA415-14L0	14" Arm Assy, Awning	1/2" [12.7mm]	WCHT00114LN	WCHT001-14LN	14" Track Assy, non-adjustable	14	356
WAHA41514R0	WAHA415-14R0	14" Arm Assy, Awning	1/2" [12.7mm]	WCHT00114RN	WCHT001-14RN	14" Track Assy, non-adjustable	14	356
WAHA41518L0	WAHA415-18L0	18" Arm Assy, Awning	1/2" [12.7mm]	WAHT00118LN	WAHT001-18LN	18" Track Assy, non-adjustable	18	457
WAHA41518R0	WAHA415-18R0	18" Arm Assy, Awning	1/2" [12.7mm]	WAHT00118RN	WAHT001-18RN	18" Track Assy, non-adjustable	18	457
WAHA41522L0	WAHA415-22L0	22" Arm Assy, Awning	1/2" [12.7mm]	WAHT00122LN	WAHT001-22LN	22" Track Assy, non-adjustable	22	559
WAHA41522R0	WAHA415-22R0	22" Arm Assy, Awning	1/2" [12.7mm]	WAHT00122RN	WAHT001-22RN	22" Track Assy, non-adjustable	22	559

Note: All dimensions in [] are metric



CASEMENT AND AWNING LOCKING HARDWARE

Ashland's Optima locking hardware has outstanding functional and manufacturing upgrades that set it apart in the industry. Provided in a coastal stainless steel platform that is the standard offering, it also has extended lock bar travel to pull in the upper sash corner and is developed with self-locating features to help speed window assembly.

The information below is offered as a guideline to cover much of what the industry offers. As many unique features of casement sash and frame will need to be accommodated by some adjustments to the following dimensions and part number data, a full detailed application review is encouraged.

CASEMENT AND AWNING LOCKS

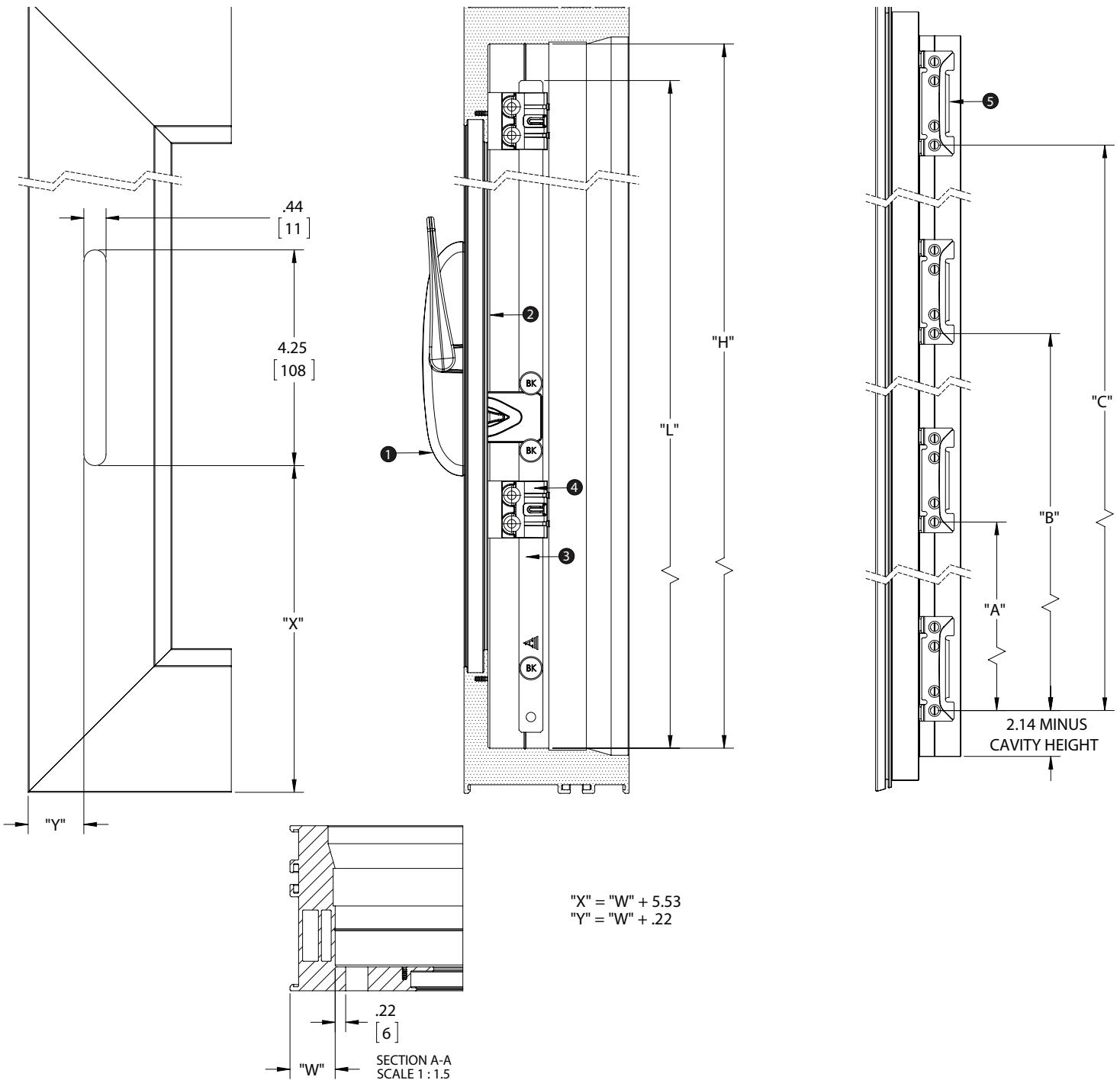
Details of the Ashland Optima lock systems are shown on the next page.

CASEMENT LOCK

The Ashland casement system will cover a range of window heights from 20" [508 mm] up to 80" [2032 mm] tall with a progressive lock-up that keeps operating forces low and ensures sash pull-in from the bottom of the sash to the top. The lock bar size chart shows the many options available for 2-point, 3-point and 4-points of locking.

To help window manufacturers understand the critical dimensions needed in selecting hardware options properly, Ashland has put together the following application review. Throughout the drawings are dimensions and formulas that have been proven to result in the best performing hardware selections.

Ashland's casement lock system consists of a lock actuator and backing plate, a lock bar, and any number of select keepers and retainers. Keepers and retainers are selected to optimize window performance for pull-in and weather sealing.



Hardware Shown		
Order Number	Product Number	Description
① W14921KH1	W1492-1KH1	Casement Lock Actuator
② W14929S1	W1492-9S1	Lock back plate
③ WCMS4XXX001	WCMS4-XXX001	Lock Bar
④ W149404ALP84	W1494-04AL-P84	Lock Bar Retainer
⑤ W149501VK	W1495-01VK	Keeper

Note: All dimensions in [] are metric



LOCK BAR SIZE CHART

The chart below uses the suggested dimensions from the previous page and tabulates the keeper locations for a given INSIDE frame height, H, and the number of recommended keepers for the sash. Using this chart will maximize the amount of pull-in, weather and wind-load resistance for each window size.

The Ashland lock bar assembly numbers shown are a list of one product line. As explained below, Ashland has the ability to provide lock bars in the various lengths shown, plus 3 different lock pin heights. The keeper locations will vary depending on lock placement and frame size.

LOCK BAR SIZE CHART (IN.)

4-PT. LOCKS	80	77.50	24.39	48.97	73.34	WCMS4-774001
	76	73.50	23.06	46.30	69.34	WCMS4-734001
	72	69.50	21.73	43.64	65.34	WCMS4-694001
	68	65.50	20.39	40.97	61.34	WCMS4-654001
	64	61.50	19.06	38.30	57.34	WCMS4-614001
3-PT. LOCKS	80	77.50	36.57	73.34		WCMS4-773001
	76	73.50	34.57	69.34		WCMS4-733001
	72	69.50	32.57	65.34		WCMS4-693001
	68	65.50	30.57	61.34		WCMS4-653001
	64	61.50	28.57	57.34		WCMS4-613001
	60	57.50	26.57	53.34		WCMS4-573001
	56	53.50	24.57	49.34		WCMS4-533001
	52	49.50	22.57	45.34		WCMS4-493001
	48	45.50	20.57	41.34		WCMS4-453001
	44	41.50	18.57	37.34		WCMS4-413001
	40	37.50	16.57	33.34		WCMS4-373001
	36	33.50	14.57	29.34		WCMS4-333001
	32	29.50	12.57	25.34		WCMS4-293001
2-PT. LOCKS	60	57.50	53.09			WCMS4-572001
	56	53.50	49.09			WCMS4-532001
	52	49.50	45.09			WCMS4-492001
	48	45.50	41.09			WCMS4-452001
	44	41.50	37.09			WCMS4-412001
	40	37.50	33.09			WCMS4-372001
	36	33.50	29.09			WCMS4-332001
	32	29.50	25.09			WCMS4-292001
	28	25.50	21.09			WCMS4-252001
	24	21.50	17.09			WCMS4-212001
	20	17.50	13.09			WCMS4-172001
	"H" Min.	"L"	"A"	"B"	"C"	Lock Bar Assembly
KEEPER LOCATIONS						PART NUMBERS

LOCK BAR SIZE CHART (mm)

4-PT. LOCKS	2032	1969	620	1244	1863	WCMS4-774001
	1930	1867	586	1176	1761	WCMS4-734001
	1829	1765	552	1108	1660	WCMS4-694001
	1727	1664	518	1041	1558	WCMS4-654001
	1626	1562	484	973	1456	WCMS4-614001
3-PT. LOCKS	2032	1969	929	1863		WCMS4-773001
	1930	1867	878	1761		WCMS4-733001
	1829	1765	827	1660		WCMS4-693001
	1727	1664	776	1558		WCMS4-653001
	1626	1562	726	1456		WCMS4-613001
	1524	1461	675	1355		WCMS4-573001
	1422	1359	624	1253		WCMS4-533001
	1321	1257	573	1152		WCMS4-493001
	1219	1156	522	1050		WCMS4-453001
	1118	1054	472	948		WCMS4-413001
	1016	953	421	847		WCMS4-373001
	914	851	370	745		WCMS4-333001
	813	749	319	644		WCMS4-293001
2-PT. LOCKS	1524	1461	1348			WCMS4-572001
	1422	1359	1247			WCMS4-532001
	1321	1257	1145			WCMS4-492001
	1219	1156	1044			WCMS4-452001
	1118	1054	942			WCMS4-412001
	1016	953	840			WCMS4-372001
	914	851	739			WCMS4-332001
	813	749	637			WCMS4-292001
	711	648	536			WCMS4-252001
	610	546	434			WCMS4-212001
	508	445	332			WCMS4-172001
	"H" Min.	"L"	"A"	"B"	"C"	Lock Bar Assembly
KEEPER LOCATIONS						PART NUMBERS

LOCK BAR NUMBERING

Ashland Hardware Lock bar numbering follows a convention where the length and number of lock points are in the number.

WCMS4 AA B 00 C

AA – Lock bar length

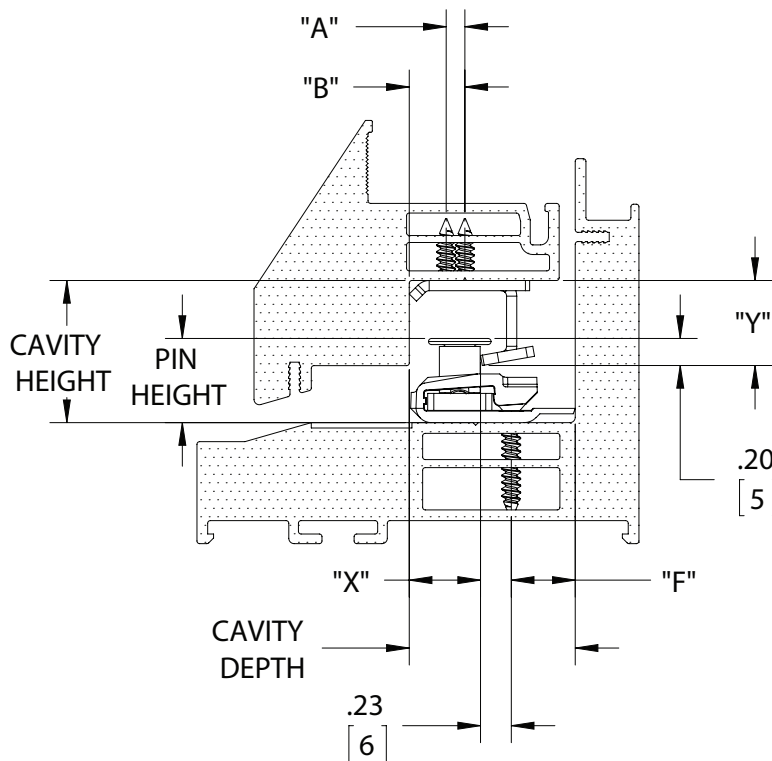
B – Number of locking points

C – Height of the lock pin (see Pin Height below)

Pin Height (in.)	Pin Height (mm)
0.619	15.7
0.515	13.1
0.584	14.8

$$\text{CAVITY DEPTH} = "X" + "F" + .23"$$

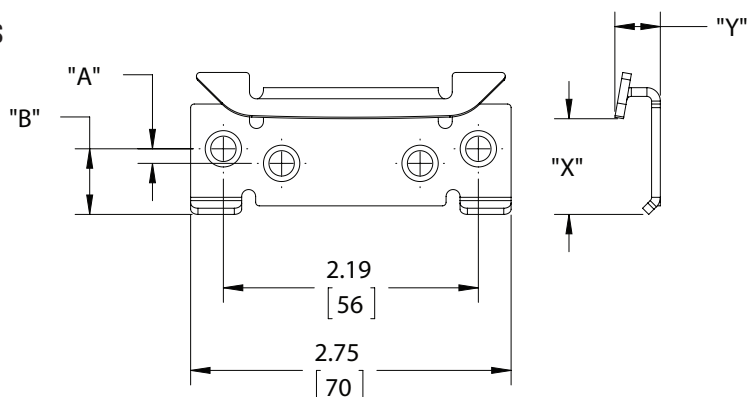
$$\text{CAVITY HEIGHT} = "Y" + \text{PIN} - .20$$



KEEPERS AND RETAINERS

Keeper and retainer selection is critical to achieving a good seal, keeping locking forces low, and optimizing the window air, water and structural performances. The following charts are the selection guides for each.

KEEPERS



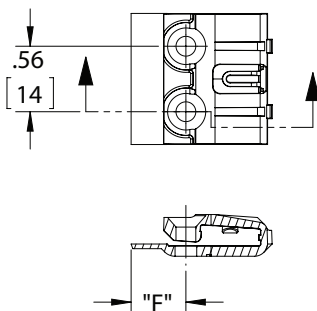
KEEPER SIZE CHART (IN.)

Order Number	Product Number	DIM. "A" ± .010	DIM. "B" ± .010	DIM. "X" ± .015	DIM. "Y" ± .010
1920099	W1495-01SI1	0.312	0.908	0.941	0.469
W149501PG	W1495-01PG	0.031	0.397	0.493	0.430
W149501VK	W1495-01VK	0.000	0.409	0.524	0.625
W149501RM	W1495-01RM	0.125	0.500	0.605	0.578
2001075	W1495-01DA	0.125	0.500	0.710	0.438
W149501AL2	W1495-01AL2	0.031	0.375	0.511	0.390
W149501AD	W1495-01AD	0.237	0.570	0.655	0.469
W149501AL1	W1495-01AL1	0.031	0.375	0.821	0.390
W149501SE	W1495-01SE	0.237	0.656	0.808	0.438

KEEPER SIZE CHART (mm)

Order Number	Product Number	DIM. "A" ± .25	DIM. "B" ± .25	DIM. "X" ± .38	DIM. "Y" ± .25
1920099	W1495-01SI1	7.92	23.06	23.90	11.91
W149501PG	W1495-01PG	0.79	10.08	12.52	10.92
W149501VK	W1495-01VK	0.00	10.39	13.31	15.88
W149501RM	W1495-01RM	3.18	12.70	15.37	14.68
2001075	W1495-01DA	3.18	12.70	18.03	11.13
W149501AL2	W1495-01AL2	0.79	9.53	12.98	9.91
W149501AD	W1495-01AD	6.02	14.48	16.64	11.91
W149501AL1	W1495-01AL1	0.79	9.53	20.85	9.91
W149501SE	W1495-01SE	6.02	16.66	20.52	11.13

RETAINERS



RETAINER SIZE CHART (IN.)

Order Number	Product Number	DIM. "F" ± .010
W149404VKP84	W1494-04VK-P84	0.468
W149404SRP84	W1494-04SR-P84	0.611
W149404RMP84	W1494-04RM-P84	0.557
W149404DAP84	W1494-04DA-P84	0.586
W149404ALP84	W1494-04AL-P84	0.499

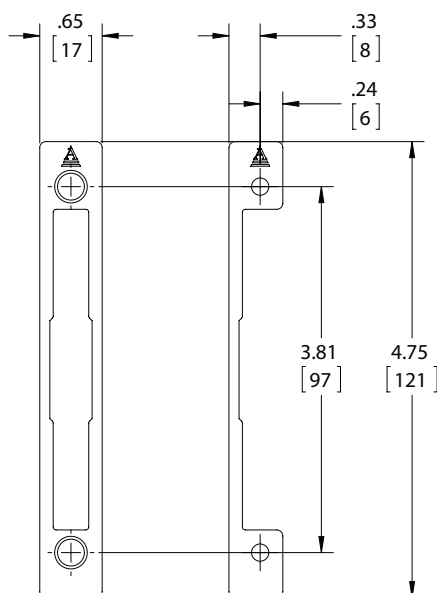
RETAINER SIZE CHART (mm)

Order Number	Product Number	DIM. "F" ± .25
W149404VKP84	W1494-04VK-P84	11.89
W149404SRP84	W1494-04SR-P84	15.52
W149404RMP84	W1494-04RM-P84	14.15
W149404DAP84	W1494-04DA-P84	14.88
W149404ALP84	W1494-04AL-P84	12.67

Note – All screws must pass through two walls of vinyl to ensure structural integrity.

BACKING PLATES

Lock backing plate selection is a matter of room available in the window frame around the lock actuator body. Ashland offers two versions, both are stainless steel.



Hardware Shown		
Order Number	Product Number	Description
W14929S1	W1492-9S1	Full Surround Back-Plate
1920100	W1492-19S1	Partial Surround Back-Plate

ASSEMBLY PROCEDURE

Assembly of the vinyl casement lock system to a window frame can be done by following four very simple steps.

1. With the lock actuator tongue in the unlocked position (resting nearest the sill). Slide the lock actuator through the processed hole in the frame and hold it against the frame front wall. The lock lever should be facing inside of the window.
2. Set the lock backing plate on the inside frame wall and position it so the screw holes line up with the actuator screw mounting holes. Insert and tighten screws.
3. Slide lock bar retainers onto the proper size lock bar and snap into pre-positioned holes.
4. Position the double pins on either side of the lock tongue and slide the bar with retainers snugly against the two vinyl walls to locate it in place. It can now be fixed in place with the proper screw.

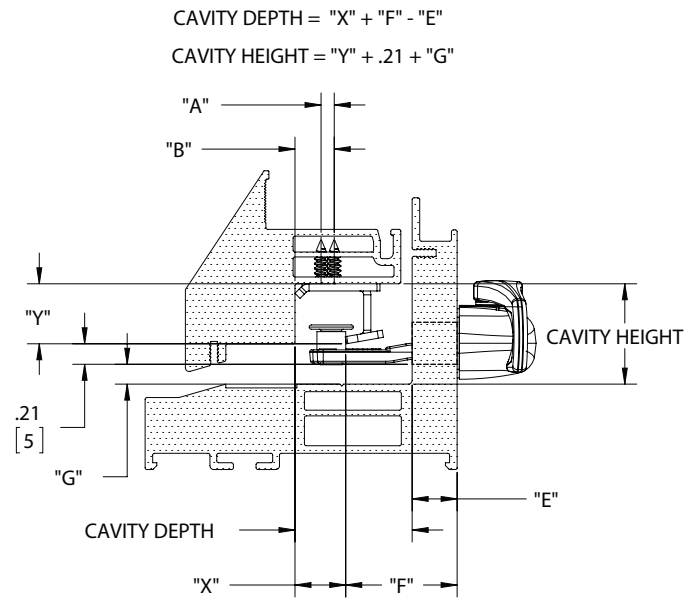
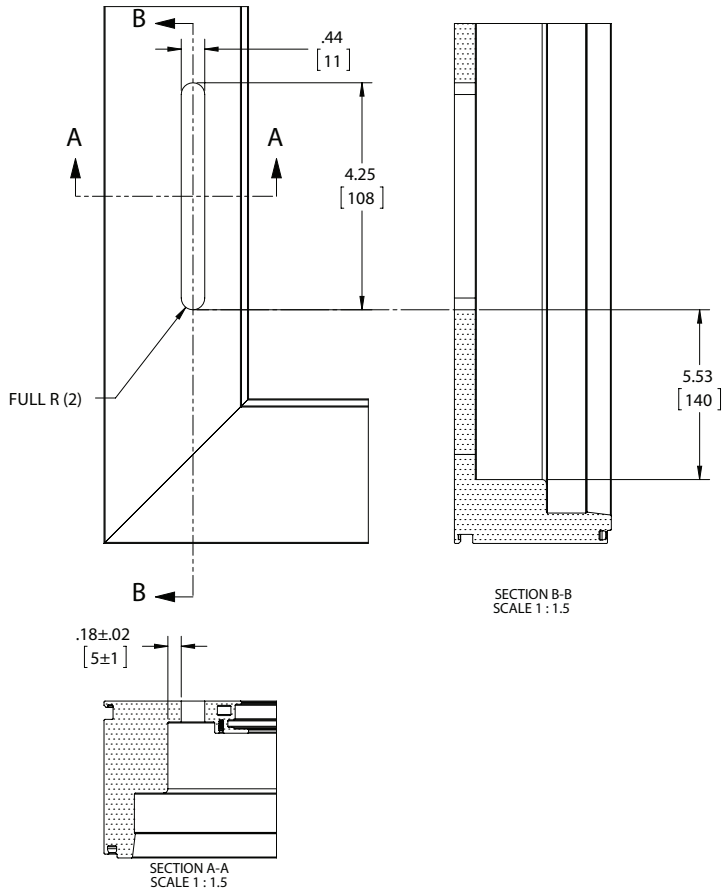
CASEMENT LOCK ACTUATORS



Order Number	Product Number	Description
W14921E3	W1492-1E3	CASEMENT LOCK ACTUATOR - Chrome
W14921E4	W1492-1E4	CASEMENT LOCK ACTUATOR - Brushed Chrome
W14921G9AG	W1492-1G9AG	CASEMENT LOCK ACTUATOR - Satin Nickel
W14921K67	W1492-1K67	CASEMENT LOCK ACTUATOR - Caramel
W14921KA2	W1492-1KA2	CASEMENT LOCK ACTUATOR - Sahara Beige
W14921KA8	W1492-1KA8	CASEMENT LOCK ACTUATOR - Dark Bronze
W14921KH1	W1492-1KH1	CASEMENT LOCK ACTUATOR - Cream White
W14921KH12	W1492-1KH12	CASEMENT LOCK ACTUATOR - Rich Beige
W14921KH13	W1492-1KH13	CASEMENT LOCK ACTUATOR - Dark Brown
W14921KH3	W1492-1KH3	CASEMENT LOCK ACTUATOR - Blue White
W14921KH4	W1492-1KH4	CASEMENT LOCK ACTUATOR - Beige
W14921KH5	W1492-1KH5	CASEMENT LOCK ACTUATOR - Dark Brown
W14921KN4	W1492-1KN4	CASEMENT LOCK ACTUATOR - Faux ORB
W14921KW4	W1492-1KW4	CASEMENT LOCK ACTUATOR - Colonial White
W14921KW7	W1492-1KW7	CASEMENT LOCK ACTUATOR - Ashland White
W14921KY6	W1492-1KY6	CASEMENT LOCK ACTUATOR - Pontiac Gold
W14921027M	W1492-1027M	CASEMENT LOCK ACTUATOR - Antique Brass
W1492103	W1492-103	CASEMENT LOCK ACTUATOR - Polished Brass

AWNING LOCK

The following details show how the Optima Awning locks are applied to the window sash and frame. There are two locks per Awning window. To be comparable to the casement lock actuator, the Awning actuator handles also face toward the inside of the window. Although described as an Awning lock, this exact same application can be used on windows that are below 21" [533 mm] tall.



KEEPER SIZE CHART (IN.)

Order Number	Product Number	DIM. "A" ± .010	DIM. "B" ± .010	DIM. "X" ± .015	DIM. "Y" ± .010
1920099	W1495-01SI1	0.312	0.908	0.941	0.469
W149501PG	W1495-01PG	0.031	0.397	0.493	0.430
W149501VK	W1495-01VK	0.000	0.409	0.524	0.625
W149501RM	W1495-01RM	0.125	0.500	0.605	0.578
2001075	W1495-01DA	0.125	0.500	0.710	0.438
W149501AL2	W1495-01AL2	0.031	0.375	0.511	0.390
W149501AD	W1495-01AD	0.237	0.570	0.655	0.469
W149501a1	W1495-01AL1	0.031	0.375	0.821	0.390
W149501SE	W1495-01SE	0.237	0.656	0.808	0.438

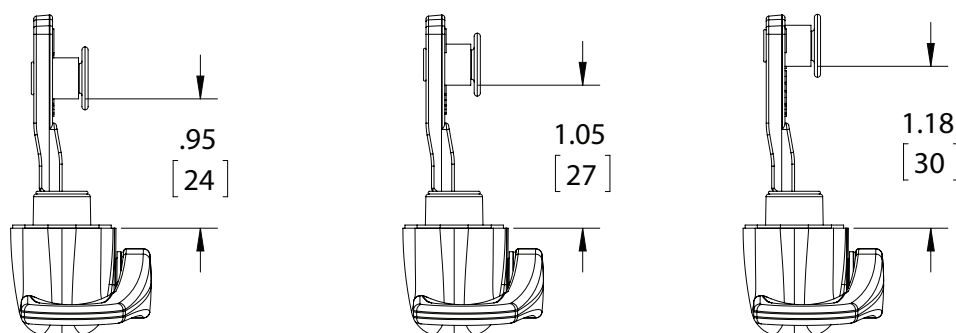
KEEPER SIZE CHART (mm)

Order Number	Product Number	DIM. "A" ± .25	DIM. "B" ± .25	DIM. "X" ± .38	DIM. "Y" ± .25
1920099	W1495-01SI1	7.92	23.06	23.90	11.91
W149501PG	W1495-01PG	0.79	10.08	12.52	10.92
W149501VK	W1495-01VK	0.00	10.39	13.31	15.88
W149501RM	W1495-01RM	3.18	12.70	15.37	14.68
2001075	W1495-01DA	3.18	12.70	18.03	11.13
W149501AL2	W1495-01AL2	0.79	9.53	12.98	9.91
W149501AD	W1495-01AD	6.02	14.48	16.64	11.91
W149501AL1	W1495-01AL1	0.79	9.53	20.85	9.91
W149501SE	W1495-01SE	6.02	16.66	20.52	11.13

Note: All dimensions in [] are metric

AWNING LOCK ACTUATORS

Ashland offers three Awning lock pin locations in order to make sure there is a nice fit for the window systems and minimize the number of keepers in any given program.



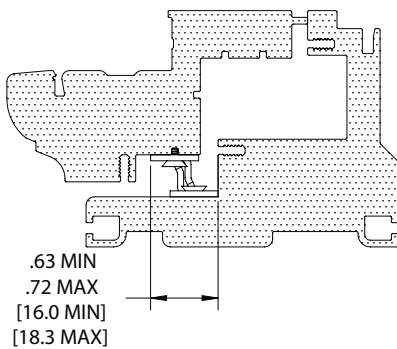
Order Number	Product Number	Description	Pin Location (in)	Pin Location (mm)
W14931E3	W1493-1E3	AWNING LOCK ACTUATOR - Chrome	1.18	30
W14931E4	W1493-1E4	AWNING LOCK ACTUATOR - Brushed chrome	1.18	30
W14931G9AG	W1493-1G9AG	AWNING LOCK ACTUATOR - Satin Nickel	1.18	30
W14931K67	W1493-1K67	AWNING LOCK ACTUATOR - Caramel	1.18	30
W14931KA2	W1493-1KA2	AWNING LOCK ACTUATOR - Sahara Beige	1.18	30
W14931KA8	W1493-1KA8	AWNING LOCK ACTUATOR - Dark Bronze	1.18	30
W14931KB2	W1493-1KB2	AWNING LOCK ACTUATOR - Black	1.18	30
W14931KH1	W1493-1KH1	AWNING LOCK ACTUATOR - Cream White	1.18	30
W14931KH12	W1493-1KH12	AWNING LOCK ACTUATOR - Rich Beige	1.18	30
W14931KH13	W1493-1KH13	AWNING LOCK ACTUATOR - Dark Brown	1.18	30
W14931KH14	W1493-1KH14	AWNING LOCK ACTUATOR - Clay	1.18	30
W14931KH3	W1493-1KH3	AWNING LOCK ACTUATOR - Blue White	1.18	30
W14931KH4	W1493-1KH4	AWNING LOCK ACTUATOR - Beige	1.18	30
W14931KH5	W1493-1KH5	AWNING LOCK ACTUATOR - Dark Brown	1.18	30
W14931KN4	W1493-1KN4	AWNING LOCK ACTUATOR - Faux ORB	1.18	30
W14931KW4	W1493-1KW4	AWNING LOCK ACTUATOR - Colonial White	1.18	30
W14931KW7	W1493-1KW7	AWNING LOCK ACTUATOR - Ashland White	1.18	30
W14931KY6	W1493-1KY6	AWNING LOCK ACTUATOR - Pontiac Gold	1.18	30
W14931O27M	W1493-1O27M	AWNING LOCK ACTUATOR - Antique Brass	1.18	30
W14931O3	W1493-1O3	AWNING LOCK ACTUATOR - Polished Brass	1.18	30
1920112	W1493-2D4	AWNING LOCK ACTUATOR - Highlight ORB	1.05	26.7
1920107	W1493-2G9AG	AWNING LOCK ACTUATOR - Satin Nickel	1.05	26.7
1920113	W1493-2KA11	AWNING LOCK ACTUATOR - Driftwood	1.05	26.7
1920109	W1493-2KA8	AWNING LOCK ACTUATOR - Dark Bronze	1.05	26.7
1920111	W1493-2KH12	AWNING LOCK ACTUATOR - Rich Beige	1.05	26.7
1920108	W1493-2KW1	AWNING LOCK ACTUATOR - Off White	1.05	26.7
1920110	W1493-2O3	AWNING LOCK ACTUATOR - Polished Brass	1.05	26.7

SNUBBERS

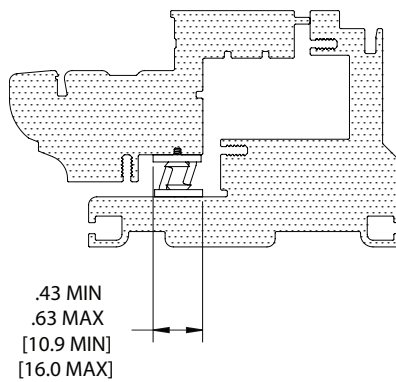
When creating a structurally sound window, the choice of snubbers is just as important as the choice of the lock system keeper and retainers. Ashland offers a wide variety of snubbers to help hold and position the sash against the frame seal as well as hold the sash in place during high DP and hurricane impact testing.

The cross-sections below show how each of the Ashland snubbers are mounted to gain optimum performance.

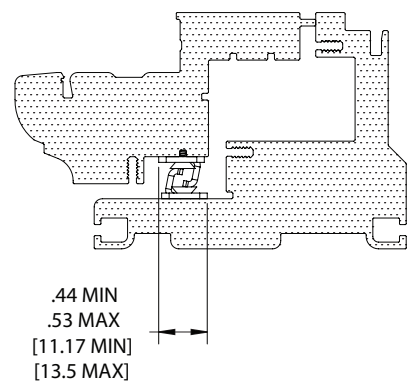
Concealed Snubber



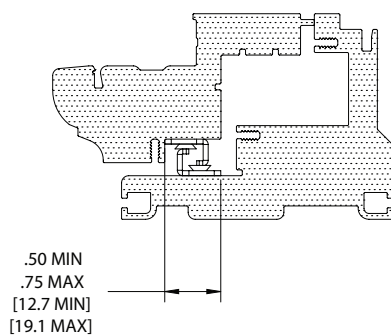
Concealed Angled Snubber



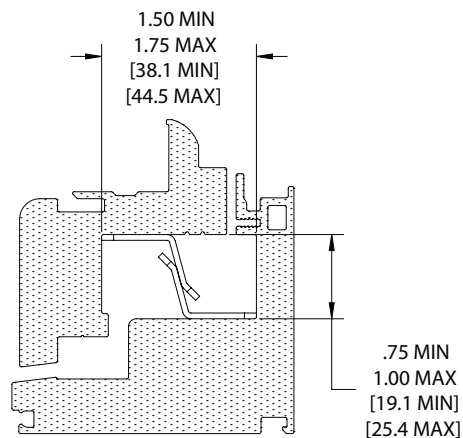
Concealed Interlocking Snubber



Concealed Interlocking High Impact Snubber



2" Compression



Hardware Shown		
Order Number	Product Number	Description
WCS1601S1	WCS1601-S1	Concealed Snubber
WCS1604S1	WCS1604-S1	Concealed Angled Snubber
WCS1603S1	WCS1603-S1	Concealed Interlocking Snubber
1920098	WCS1-1496-85	Concealed Interlocking High Impact Snubber
1920096	W1601-105	2" Compression

Note: All dimensions in [] are metric



WOOD CASEMENT AND AWNING LOCKS

The Ashland wood casement locking system is uniquely developed for the wood casement window market. Lock bars have integral lock actuators and are delivered pre-assembled. Due to the design of the components, they are non-handed until applied to a window frame.

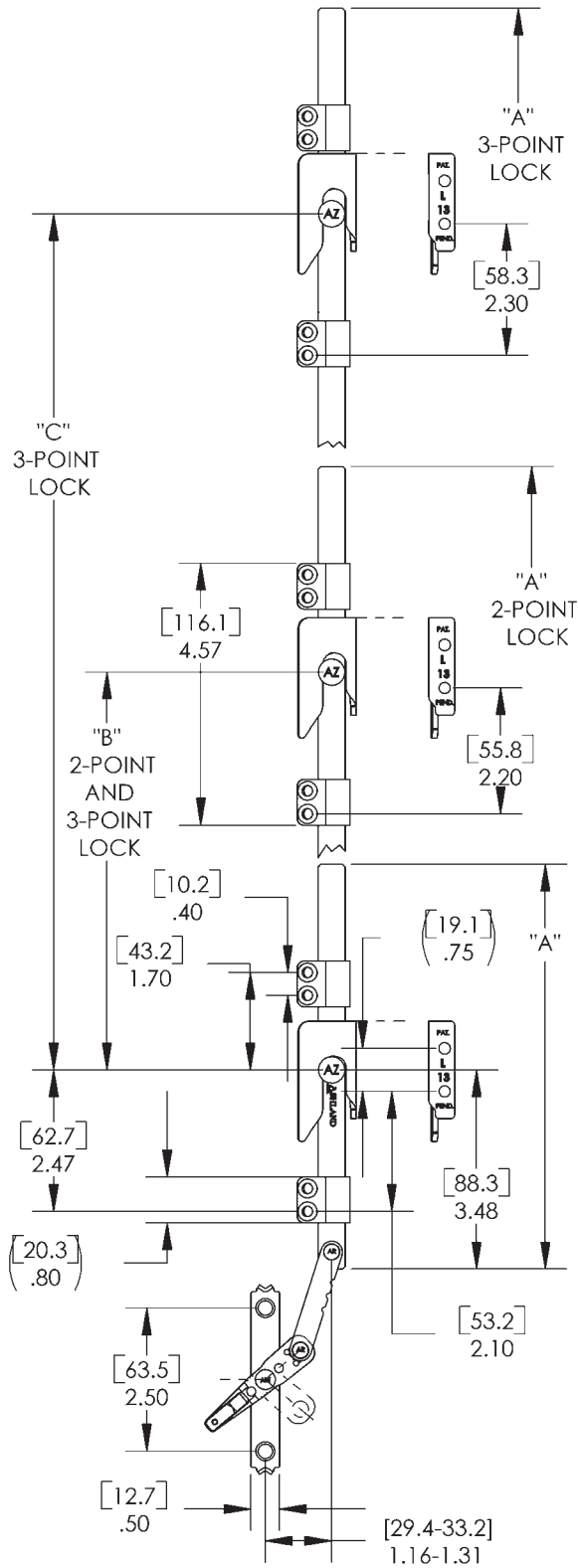
Working with the lock bar assembly is a wide range of lock visuals to choose from. These simply slide onto the lock actuator when the window is complete and ready to ship, or at the job site. The bezel part of the lock visuals should be chosen to fit the manufacturer's particular frame and stops. It snaps onto the lock actuator base, not the wood stops, for a more secure hold. The other part of the lock visuals are the handles. These are mounted after the bezel and will snap securely to the lock actuator finger.

Along with the lock bar assembly and visuals are an assortment of lock bar retainers and keepers. These are all shown throughout the Tech Sheets that follow.

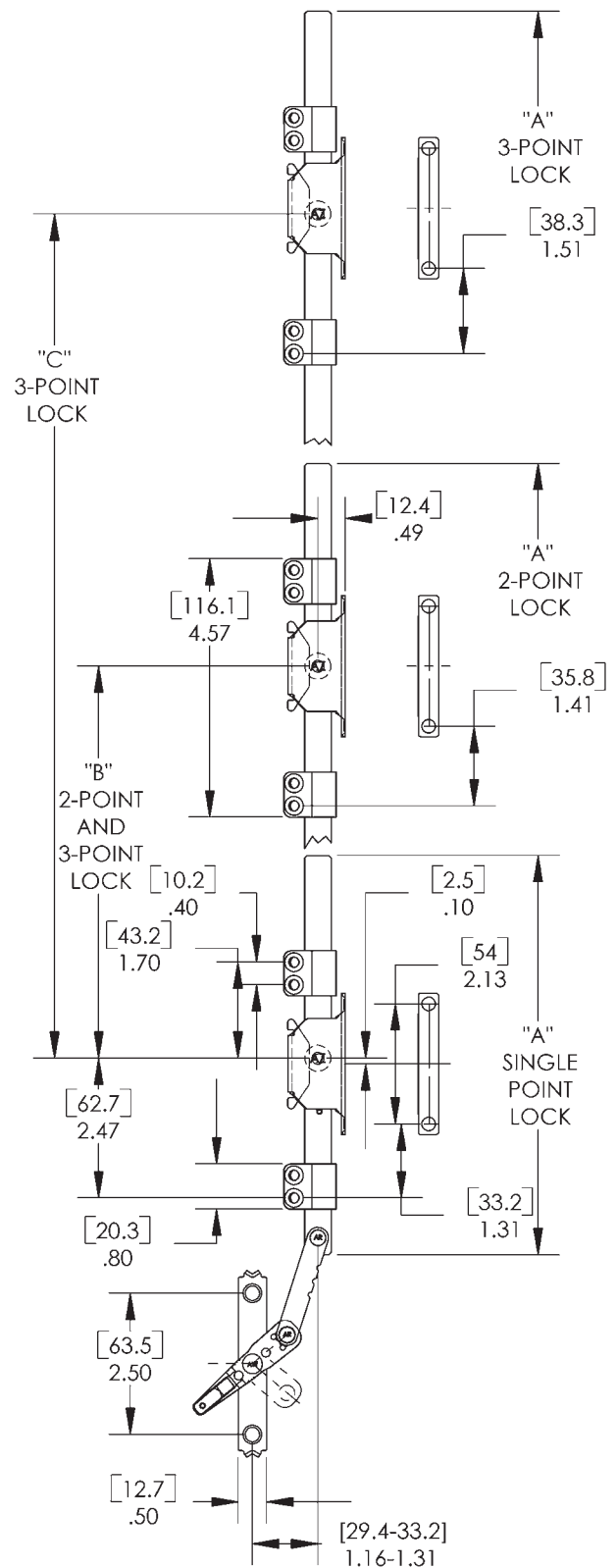
WOOD CASEMENT LOCKS

Application information shown on the next page is a typical representation that should be used as a guideline. Any change to the parameters shown may affect the resulting lock performance and should be reviewed by an Ashland representative.

LOCK BAR WITH HANDED KEEPER ASSEMBLY



LOCK BAR WITH NON-HANDED KEEPER



Note: All dimensions in [] are metric

KEEPER PLACEMENT BY LOCK BAR SIZE

LOCK BAR SIZE CHART (IN.)

3-PT. LOCKS	89		71.25	53.09	64.18	WCMS2-713003
	83		65.25	47.09	58.18	WCMS2-653003
	77		59.25	41.09	52.18	WCMS2-593003
	71		53.25	35.09	46.18	WCMS2-533003
	65		47.25	29.09	40.18	WCMS2-473003
	59		41.25	23.09	34.18	WCMS2-413003
2-PT. LOCKS	65		47.25	40.18		WCMS2-472003
	59		41.25	34.18		WCMS2-412003
	53		35.25	28.18		WCMS2-352003
	47		29.25	22.18		WCMS2-292003
	41		23.25	16.18		WCMS2-232003
	35		17.25	4.18		WCMS2-172003
1-PT. LOCKS	32		17.25			WCMS2-171003
	28		11.25			WCMS2-111003
	26		7.25			WCMS2-071003
	24		7.06			WCMS2-061003
	"H" Min.		"A"	"B"	"C"	Lock Bar Assembly
			KEEPER LOCATIONS		PART NUMBERS	

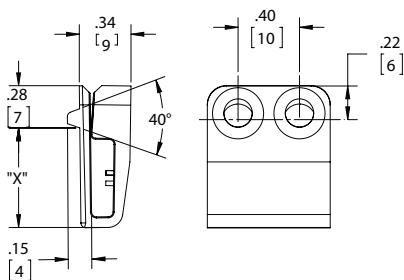
LOCK BAR SIZE CHART (mm)

3-PT. LOCKS	2261		1810	1348	1630	WCMS2-713003
	2108		1657	1196	1478	WCMS2-653003
	1956		1505	1044	1325	WCMS2-593003
	1803		1353	891	1173	WCMS2-533003
	1651		1200	739	1021	WCMS2-473003
	1499		1048	586	868	WCMS2-413003
2-PT. LOCKS	1651		1200	1021		WCMS2-472003
	1499		1048	868		WCMS2-412003
	1346		895	716		WCMS2-352003
	1194		743	563		WCMS2-292003
	1041		591	411		WCMS2-232003
	889		438	106		WCMS2-172003
1-PT. LOCKS	813		438			WCMS2-171003
	711		286			WCMS2-111003
	660		184			WCMS2-071003
	610		179			WCMS2-061003
	"H" Min.		"A"	"B"	"C"	Lock Bar Assembly
			KEEPER LOCATIONS		PART NUMBERS	

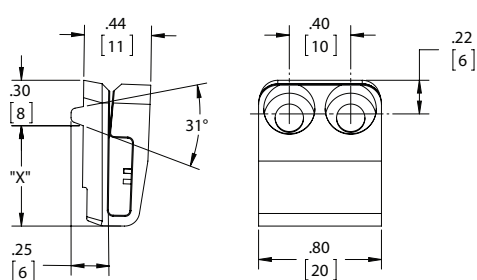
Note: "H" is overall frame height

RETAINERS

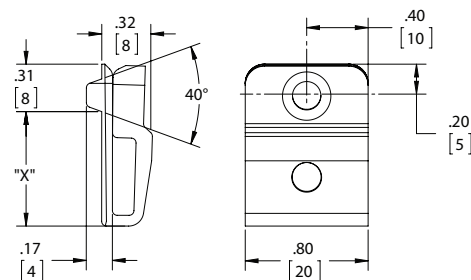
Standard Retainer



Tall Retainer



Single-Hole Retainer



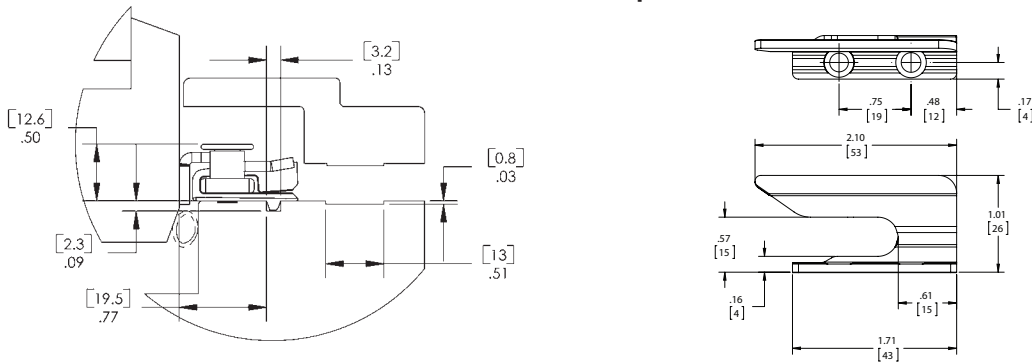
Hardware Shown		
Order Number	Product Number	Description
W620012P84	W6200-12P84	Standard Bar Retainer
W620036P5	W6200-36P5	Tall Retainer
W620112P5	W6201-12AP5	Single-Hole Bar Retainer

KEEPERS

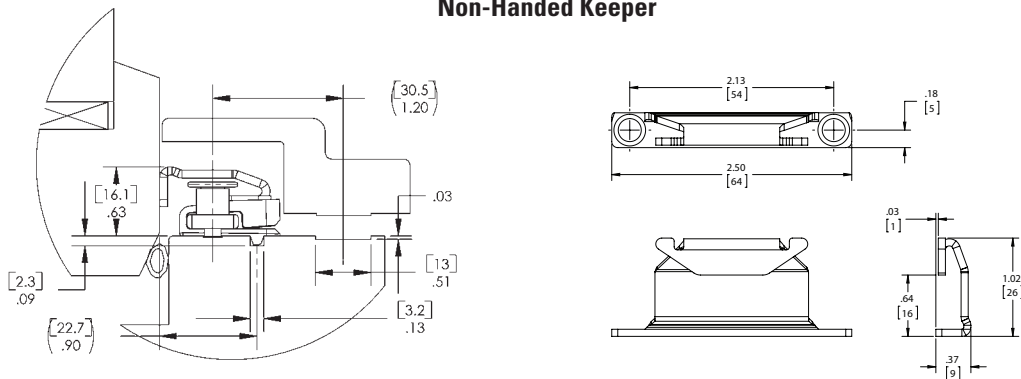
Ashland Provides three basic keeper styles along with the wood lock bar system. They are called the handed version, the non-handed version and what is known as a biscuit style. The details for each are shown below.

KEEPER DETAIL AND APPLICATION INFORMATION

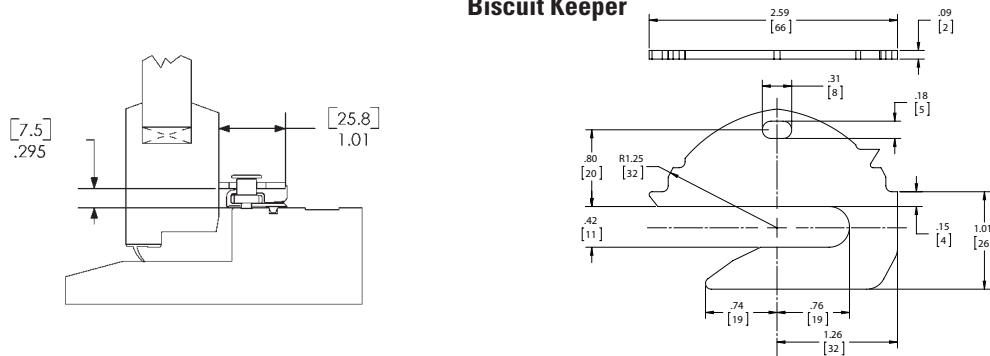
Handed Keeper



Non-Handed Keeper



Biscuit Keeper



Hardware Shown		
Order Number	Product Number	Description
W620113LS1	W6201-13LS1	Left Hand Keeper
W620113RS1	W6201-13RS1	Right Hand Keeper
W620138S1	W6201-38S1	Non-Handed Keeper
W620140S1	W6201-40S1	Biscuit Keeper

Note: All dimensions in [] are metric

WOOD CASEMENT LOCK VISUALS

Order Number	Product Number	Description
W620019B17	W6200-19B17	LOCK HANDLE - Oil Rubbed
W620019E3	W6200-19E3	LOCK HANDLE - Chrome
W620019E4	W6200-19E4	LOCK HANDLE - Brushed Chrome
W620019G30	W6200-19G30	LOCK HANDLE - Pewter
W620019G31	W6200-19G31	LOCK HANDLE - Dark Pewter
W620019G9A	W6200-19G9A	LOCK HANDLE - Satin Nickel
W620019KN4	W6200-19KN4	LOCK HANDLE - Faux ORB
W620019O27	W6200-19O27	LOCK HANDLE - Antique Brass
W620019O3	W6200-19O3	LOCK HANDLE - Polished Brass
W620025312	W6200-25312	COMPOSITE BEZEL - Clay
W620025314	W6200-25314	COMPOSITE BEZEL - White
W620025315	W6200-25315	COMPOSITE BEZEL - Gold
W620025319	W6200-25319	COMPOSITE BEZEL - Coppertone
W620025320	W6200-25320	COMPOSITE BEZEL - Charcoal
W620025321	W6200-25321	COMPOSITE BEZEL - Sandstone
W620025348	W6200-25348	COMPOSITE BEZEL - Brown Metallic
W620025354	W6200-25354	COMPOSITE BEZEL - Black
W620025364	W6200-25364	COMPOSITE BEZEL - Beige
W620042B17	W6200-42B17	METAL BEZEL - Oil Rubbed
W620042E3	W6200-42E3	METAL BEZEL - Chrome
W620042E4	W6200-42E4	METAL BEZEL - Chrome
W620042G30	W6200-42G30	METAL BEZEL - Pewter
W620042G31	W6200-42G31	METAL BEZEL - Dark Pewter
W620042G9A	W6200-42G9A	METAL BEZEL - Satin Nickel
W620042KA2	W6200-42KA2	METAL BEZEL - Sahara Beige
W620042KA9	W6200-42KA9	METAL BEZEL - Charcoal
W620042KB2	W6200-42KB2	METAL BEZEL - Matte Black
W620042KN3	W6200-42KN3	COMPOSITE BEZEL - Bronze
W620042KN4	W6200-42KN4	METAL BEZEL - Faux ORB
W620042KW7	W6200-42KW7	METAL BEZEL - White
W620042O27	W6200-42O27	METAL BEZEL - Antique Brass
W620042O3	W6200-42O3	METAL BEZEL - Polished Brass
W62009KA7	W6200-9KA7	LOCK HANDLE - Beige
W62009KA9	W6200-9KA9	LOCK HANDLE - Charcoal
W62009KB1	W6200-9KB1	LOCK HANDLE - Black
W62009KH9	W6200-9KH9	LOCK HANDLE - Gold
W62009KN2	W6200-9KN2	LOCK HANDLE - Brown Metallic
W62009KN3	W6200-9KN3	LOCK HANDLE - Bronze
W62009KW7	W6200-9KW7	LOCK HANDLE - White



INDIVIDUAL LOCK HANDLES



INDIVIDUAL LOCK BEZELS

Order Number	Product Number	Description
W6200BPE4	W6200-BPE4	COMPOSITE BEZEL/METAL HANDLE KIT - Brushed Chrome
W6200BPG31	W6200-BPG31	COMPOSITE BEZEL/METAL HANDLE KIT - Dark Pewter
W6200BPKA7	W6200-BPKA7	COMPOSITE BEZEL/METAL HANDLE KIT - Beige
W6200BPKB1	W6200-BPKB1	COMPOSITE BEZEL/METAL HANDLE KIT - Black
W6200BPKH14	W6200-BPKH14	COMPOSITE BEZEL/METAL HANDLE KIT - Clay
W6200BPKH4	W6200-BPKH4	COMPOSITE BEZEL/METAL HANDLE KIT - Tan
W6200BPKH9	W6200-BPKH9	COMPOSITE BEZEL/METAL HANDLE KIT - Gold
W6200BPKN2	W6200-BPKN2	COMPOSITE BEZEL/METAL HANDLE KIT - Bronze
W6200BPKW7	W6200-BPKW7	COMPOSITE BEZEL/METAL HANDLE KIT - White
W6200BP03	W6200-BP03	COMPOSITE BEZEL/METAL HANDLE KIT - Polished Brass
W6200ZBPB17	W6200-ZBPB17	METAL BEZEL/HANDLE KIT - Oil Rubbed
W6200ZBPE3	W6200-ZBPE3	METAL BEZEL/HANDLE KIT - Chrome
W6200ZBPE4	W6200-ZBPE4	METAL BEZEL/HANDLE KIT - Brushed Chrome
W6200ZBPG30	W6200-ZBPG30	METAL BEZEL/HANDLE KIT - Pewter
W6200ZBPKA2	W6200-ZBPKA2	METAL BEZEL/HANDLE KIT - Sahara Beige
W6200ZBPKA9	W6200-ZBPKA9	METAL BEZEL/HANDLE KIT - Charcoal
W6200ZBPKW7	W6200-ZBPKW7	METAL BEZEL/HANDLE KIT - White
W6200ZBP027	W6200-ZBP027	METAL BEZEL/HANDLE KIT - Antique Brass
W6200ZBP03	W6200-ZBP03	METAL BEZEL/HANDLE KIT - Polished Brass



LOCK HANDLE AND BEZEL KIT



NOTES

OTHER SOLUTIONS FROM ASHLAND®



Hung Window Solutions
Featuring DualTech™



Patio Door Solutions
Featuring Sentinel™



545 E. John Carpenter Freeway, Suite 610 • Irving, TX 75062 • USA

Customer Service: 844-879-3097

www.ashlandhardware.com