HH Windows & Doors

German engineered. American made.

the **tilt-turn** window

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Key features:

- Slender, modern design with concealed hinges and reduces glasslines
- Extremely energy efficient: triple overlay sash and frame construction with triple gasketing and multi-point locking hardware result in a highly insulated fenestration solution
- Completely weather and soundproof (Soundproofing up to 47 dB (SSK 5)
- Draft-free ventilation: a traditional open window often causes a draft due to the direct path of outside air into the room. With the tilt-turn window, outside air is channeled through the sides of the window, while warm air escapes through the top.
- Made from laminated solid vertical grain Douglas fir
- Solid construction: available in 2 5/8” (68mm) or 3 1/8”(78mm) thick sash and frame, with double mortise-and-tenon joinery
- Screens available
- Unlimited finishing options
- Full range of glazing options (double and triple pane)
- Also available in aluminum clad

Sizing

Multipoint locking hardware allows the tilt-turn window to be built significantly larger than a traditional casement window. Below is a summary of the size constraints:

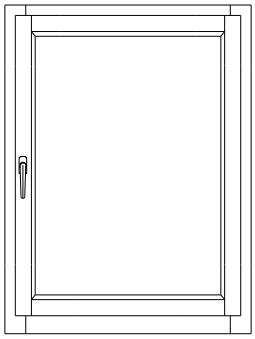
Tilt-turn:
Width: 19”-59” Height: 18”-100”

French tilt-turn:
Width: 34”-115” Height: 18”-100”

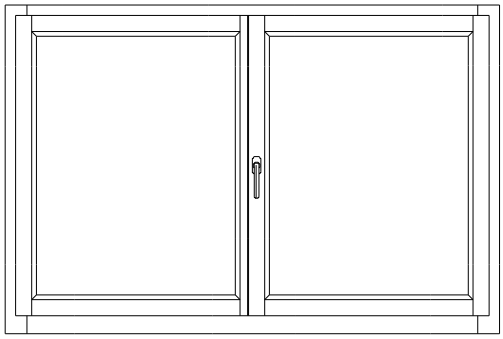
Fixed window:
Maximum lite size: 84” x 140” (note: multiple lites available)

Configurations

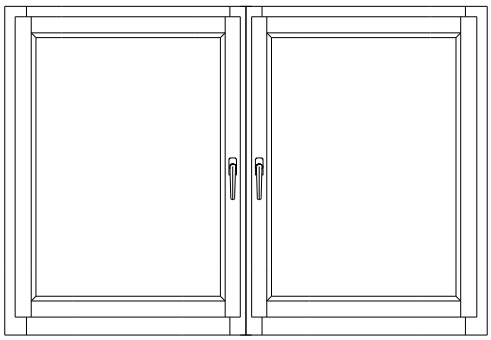
The tilt-turn window can be built as a single window, or it can be mulled together with other windows. The French tilt-turn window is a dual sash tilt-turn window with a floating astragal (no meeting post).



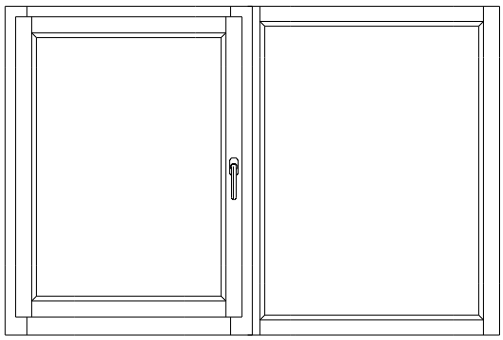
Single tilt-turn



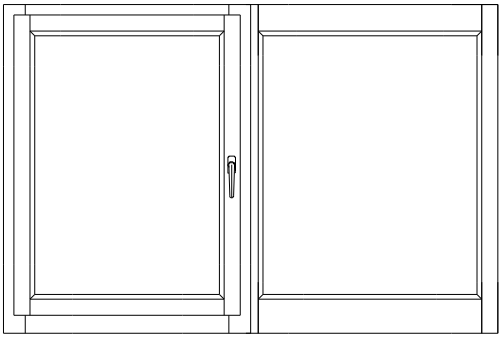
French tilt-turn



Two tilt-turns mulled together

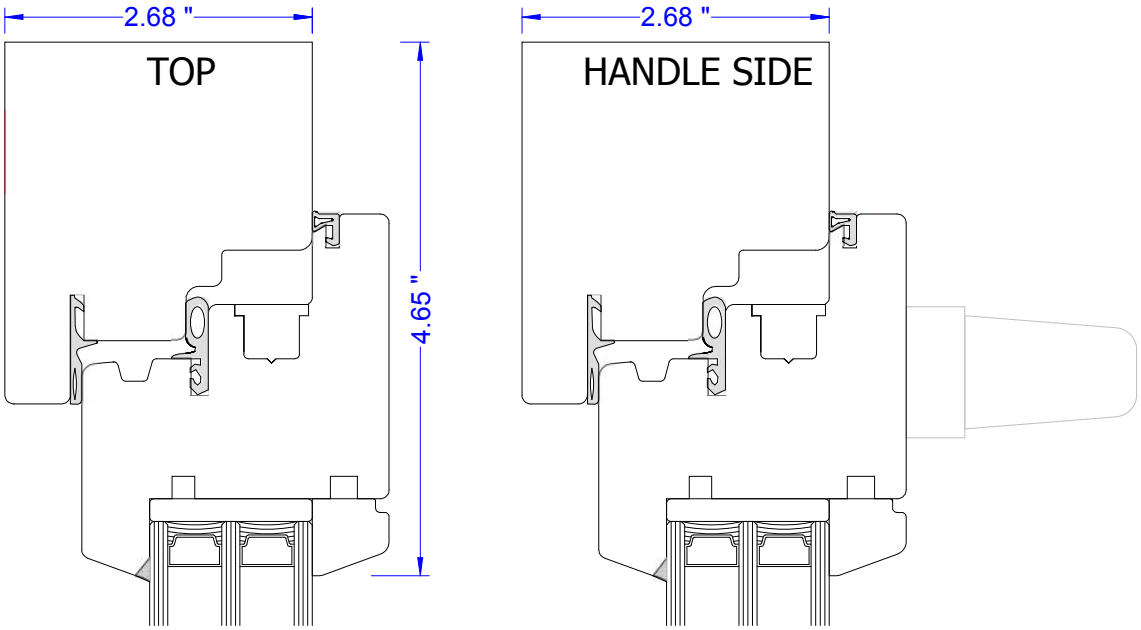


Tilt-turn mulled to fixed



Tilt-turn mulled to fixed with matching horizontal glass line

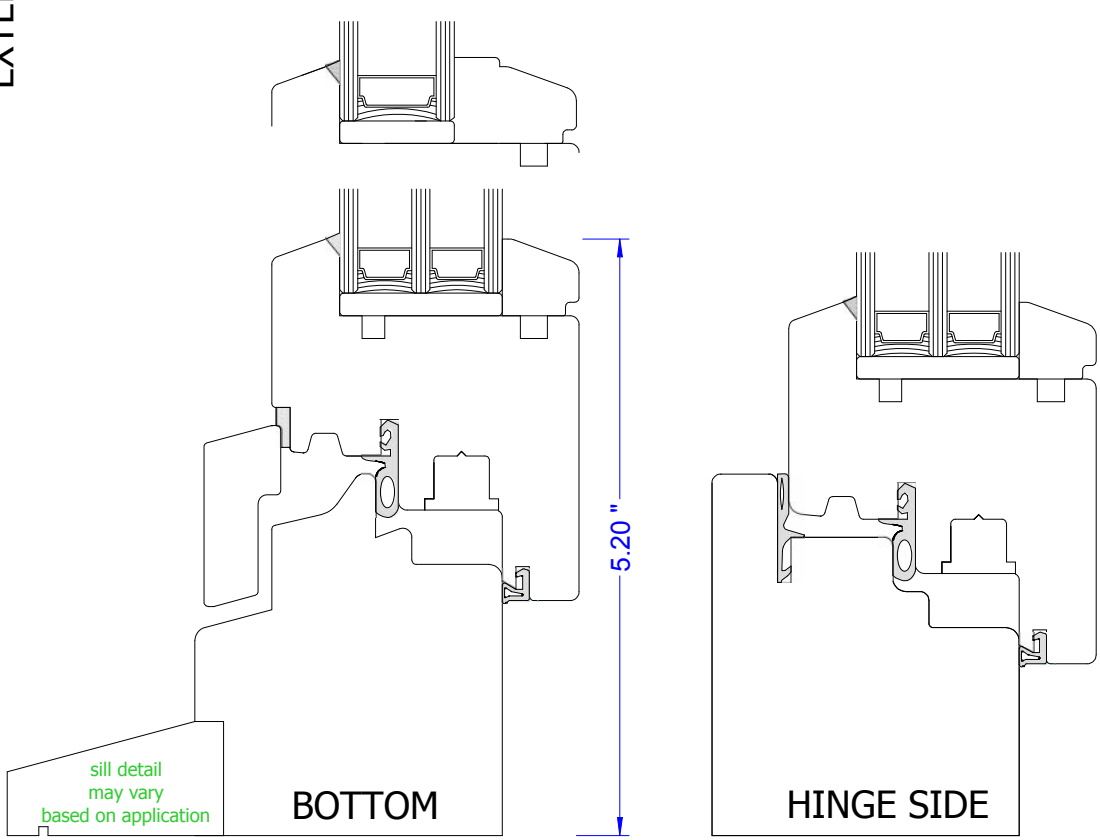
Section drawings



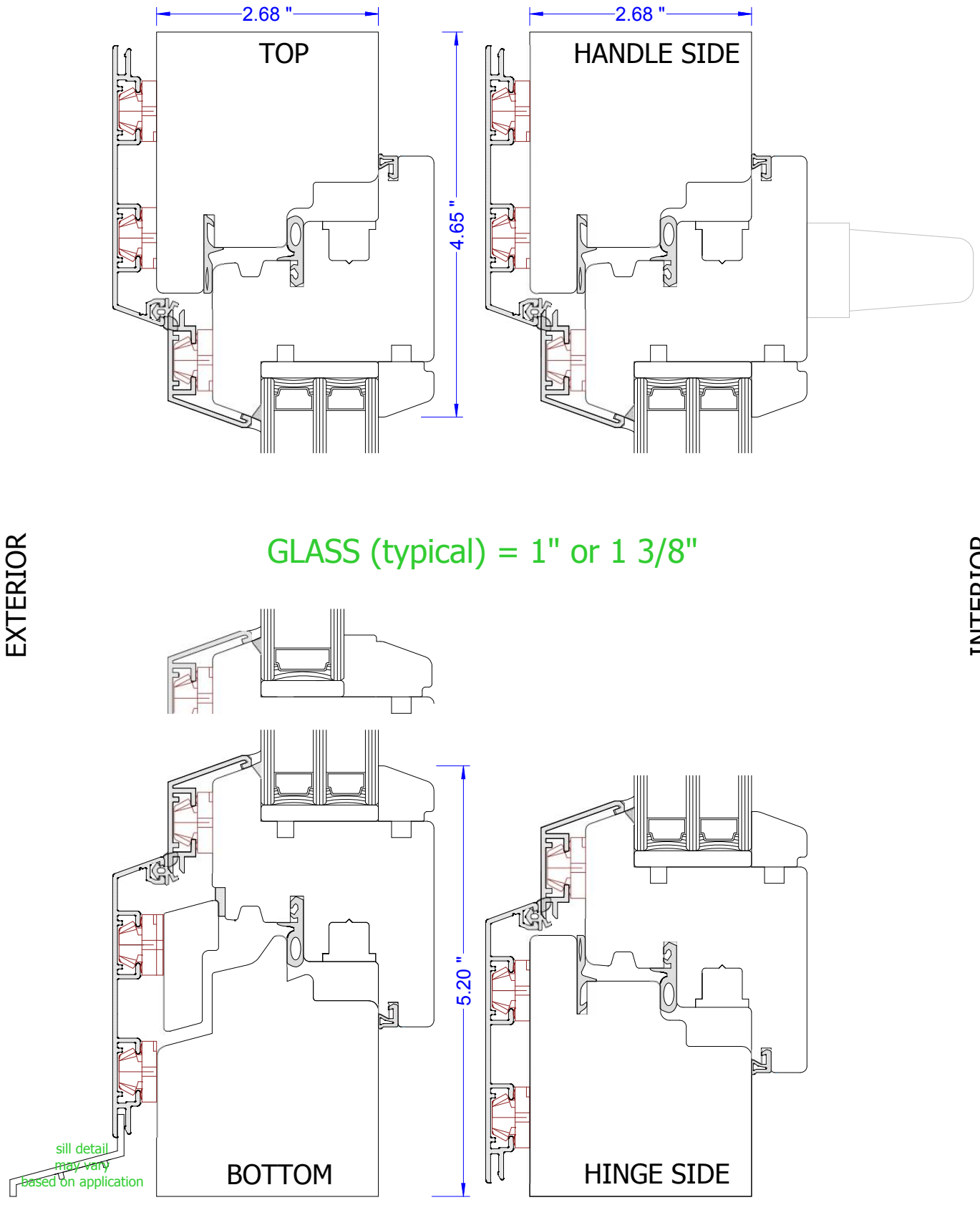
EXTERIOR

GLASS (typical) = 1" or 1 3/8"

INTERIOR

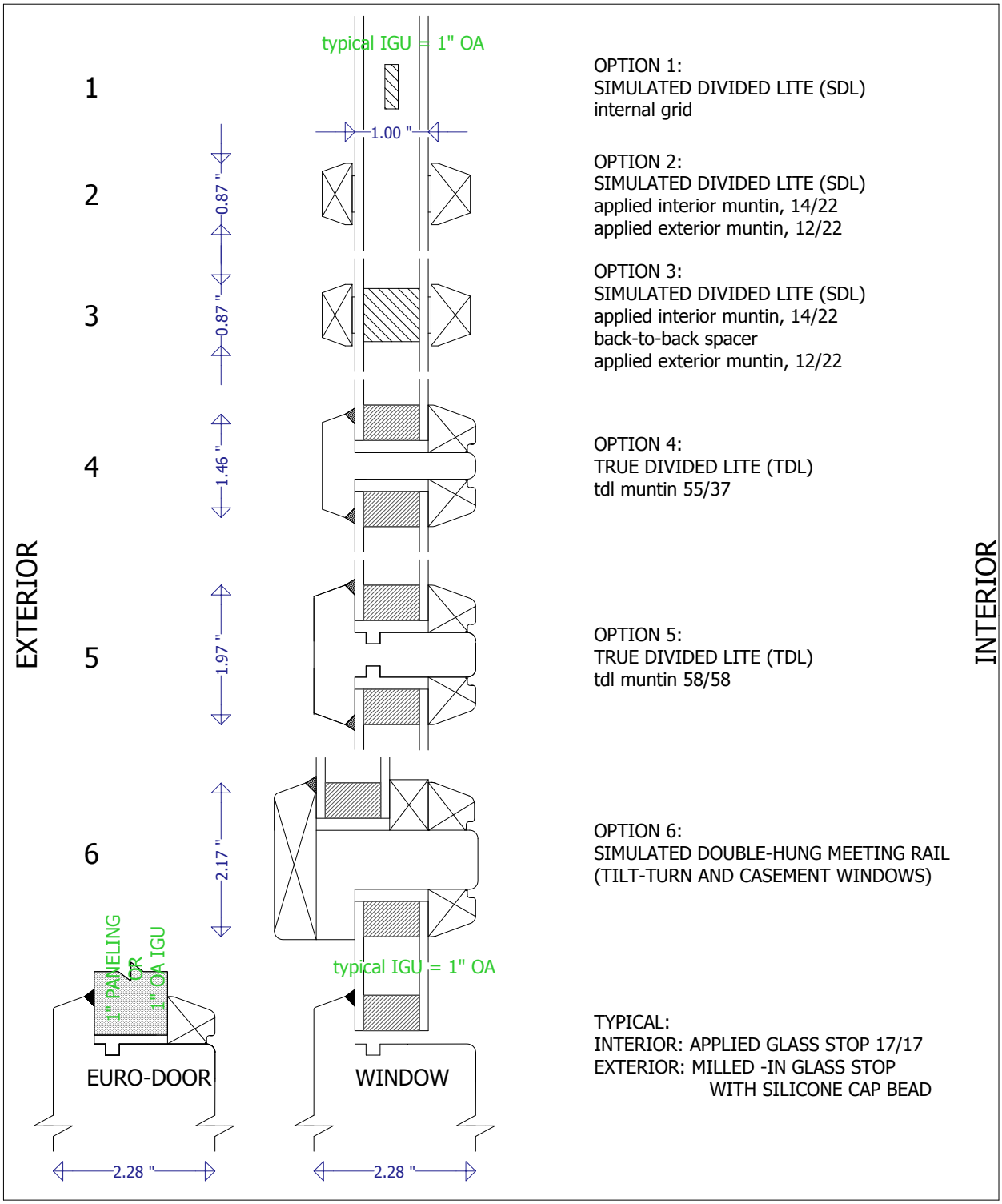


Aluminum clad section drawings



Muntins and stops

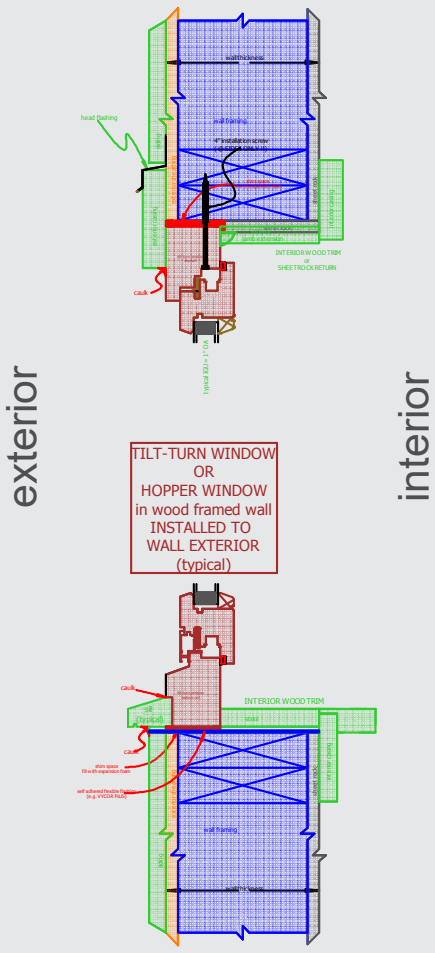
ThE tilt-turn window can be built with a single lite or with a grid pattern. There are two ways to apply a grid pattern to the window. A Simulated Divided Lite (SDL) grid pattern contains one Insulated Glass Unit with wood muntins applied to the interior and exterior of the window (thus it does not actually divide the glass). A True Divided Lite (TDL) grid pattern consists of several Insulated Glass Units separated by TDL muntins. Note that adding a grid pattern can significantly increase the price of the window. Consider therefore using a simple grid pattern or no grid pattern at all to enjoy an uninterupted view.



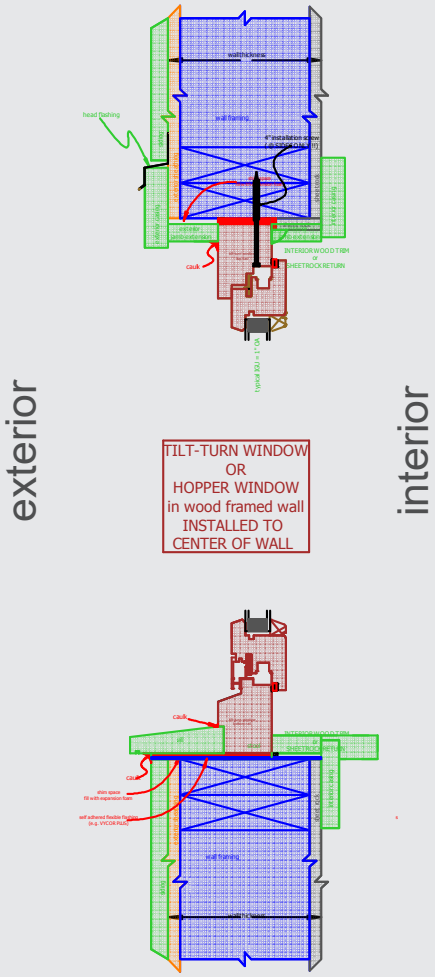
Plane of installation

The tilt-turn window can be installed flush with the wall exterior, at the wall center, or anywhere in between. The closer to the wall center that the window is installed, the better the thermal performance will be. For complete installation instructions, please contact HH Windows & Doors directly.

flush with wall exterior

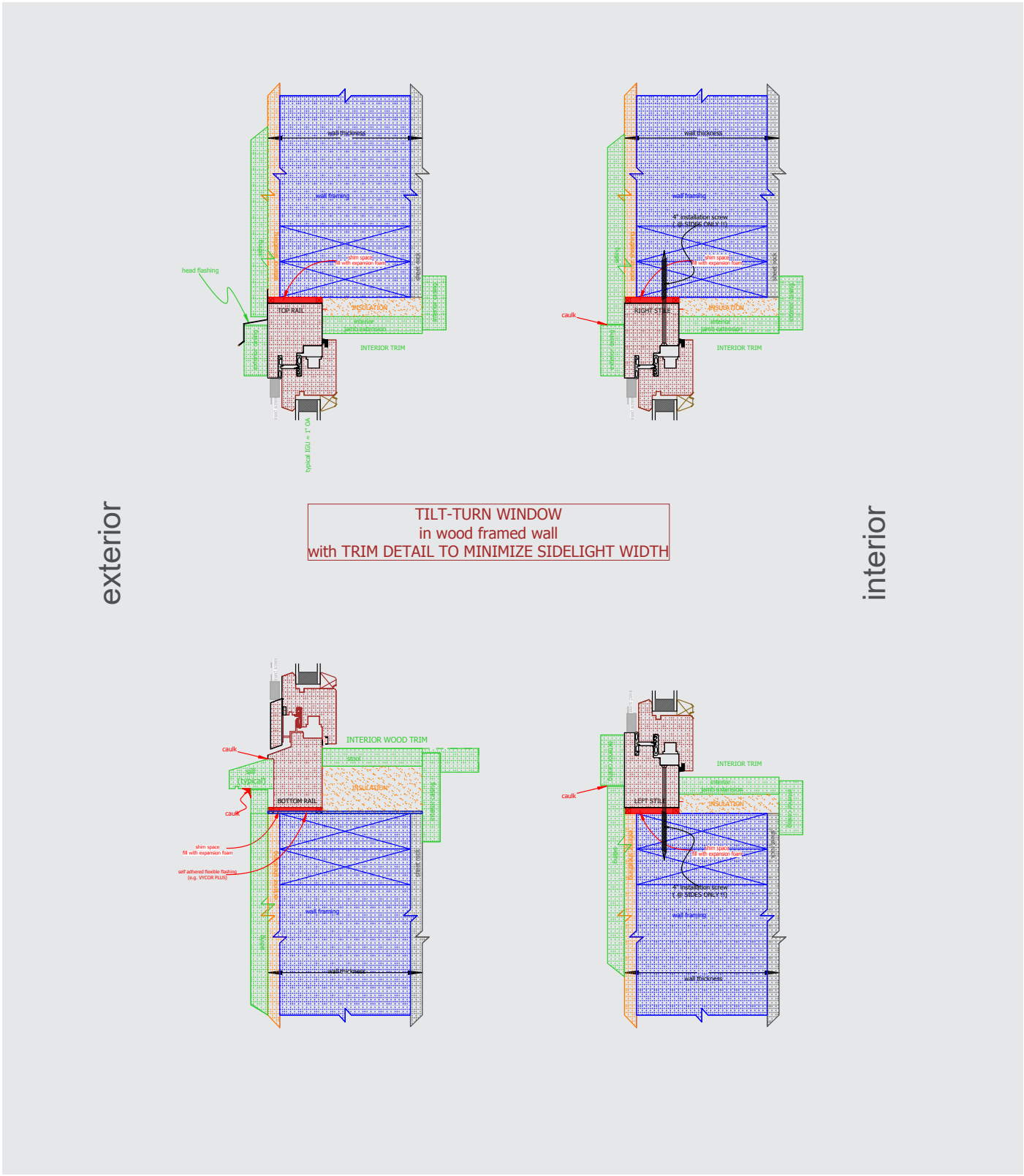


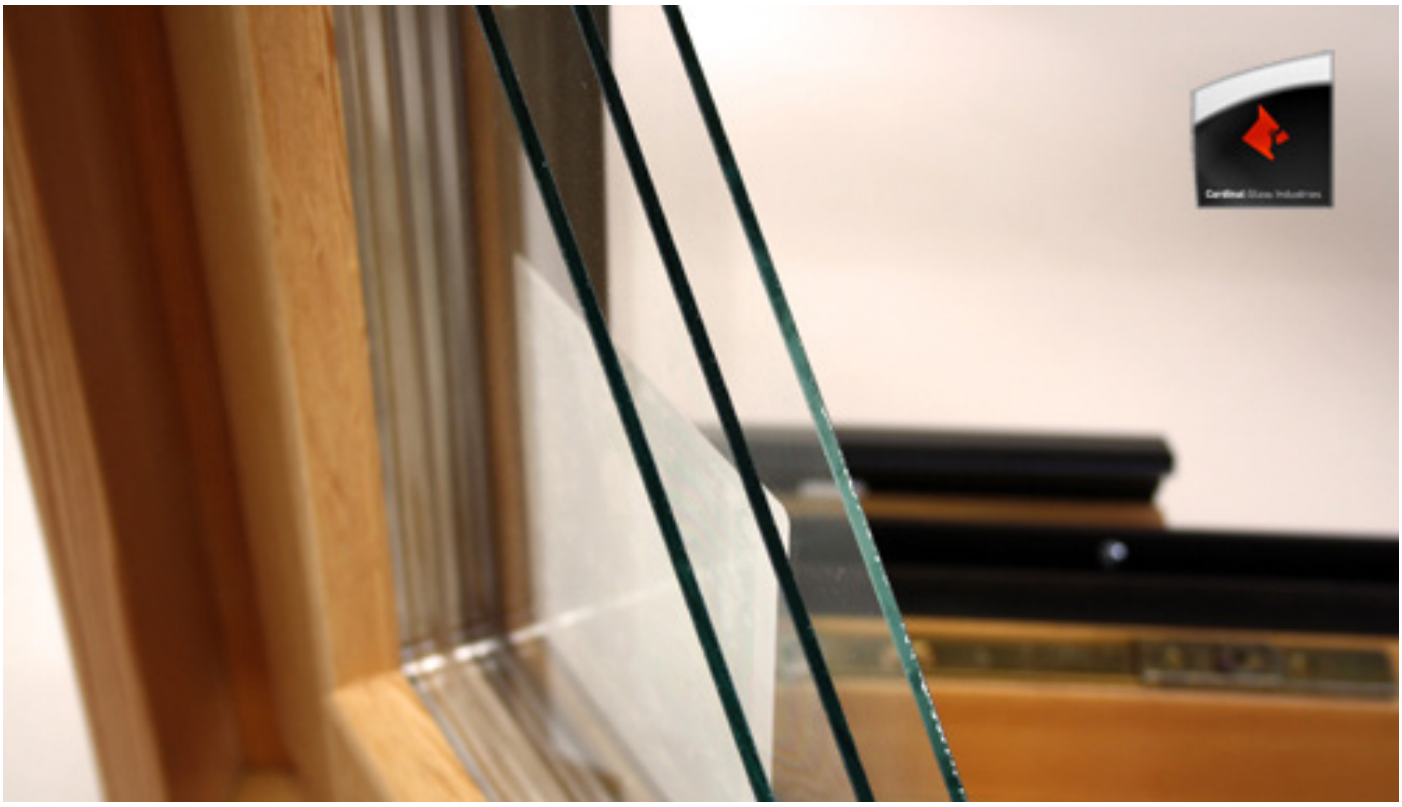
center of wall



Reducing the glasslines

By incorporating exterior casing, the tilt-turn window can have ultra thin glasslines compared with its European counterparts.





Glazing

HH Windows & Doors offers a wide selection of glazing options, and can tailor to virtually any U-value.

Standard glazing

Cardinal dual strength annealed glass
2 panes
1” overall thickness
LoE²180 / Clear
Argon gas fill
Warm edge spacer

2 pane LoE coatings

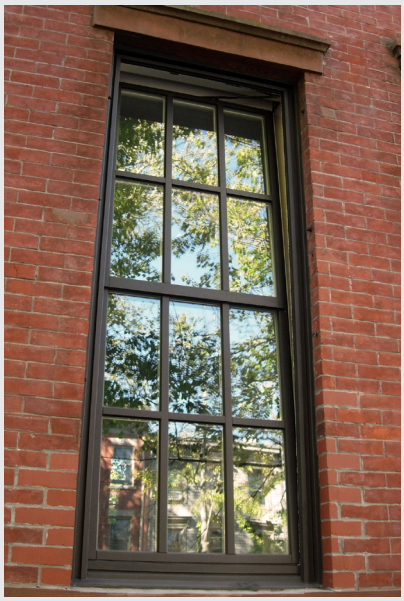
LoE²180
LoE²240
LoE²270
LoE²272
LoE²366
LoE²i81

Further glazing options

1 pane
3 panes
Safety glass (laminated or tempered)
Customized overall thickness
Breather tube
5/32”, 3/16”, 1/4” pane thickness
Obscure glass
Tinted glass
Art glass

3 pane LoE coatings

1 LoE²: 180, 240, 270, 272, 366
2 LoE² combo: 180, 240, 270, 272, 366
3 LoE² combo: 180, 240, 270, 272, 366, i81



Screens

HH Windows & Doors manufactures optional removable screens to custom fit each window. The screens have an aluminum frame with polyester mesh and sit flush with the exterior face of the window.

Exterior view

Interior view

Exterior trim

Exterior trim options

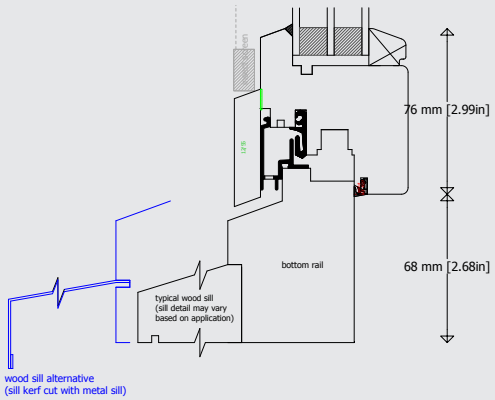
1. **Exterior jamb extensions:** Jamb extensions project outward from the edges of the window frame, creating a transition between the window and the casing. The jamb extension depth depends on how far back into the wall the window sits. If the window is recessed into the wall, the jamb extension depth must be greater in order to extend up to or past the exterior of the wall.

2. **Exterior sill:** The exterior sill provides a path for water to follow away from the window itself. HH Windows & Doors manufactures both wood and metal sills. The sill depth depends on how far back into the wall the window sits. If the window is recessed into the wall, the sill depth must be greater in order to extend past the exterior of the wall.

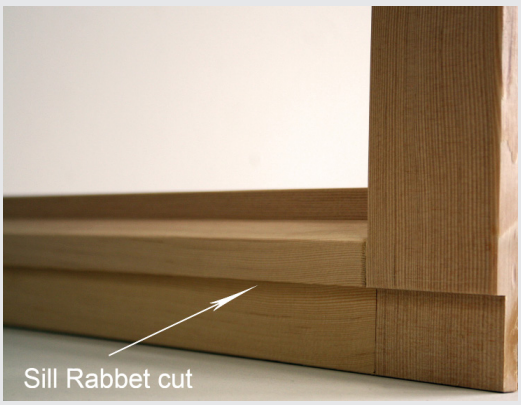
3. **Sill rabbet cut:** The sill rabbet cut is a notch cut into the bottom rail of the window frame to house the sill. Even if you choose to attach your own sills, a rabbet cut is a good weatherproofing detail.

Exterior view

1. Exterior jamb extension
2. Window frame
3. Window sash
4. Siding
5. Exterior sill



Sill detail



Exterior view

Interior trim

Interior trim options

1. **Interior jamb extensions:** Interior jamb extensions project inward from the edges of the window frame, creating a transition between the window and the interior casing. The jamb extension depth depends on how far back into the wall the window sits. If the window is recessed into the wall, the jamb extension depth must be greater in order to extend up to or past the interior of the wall.

1. Window Sash
2. Jamb extension
3. Interior casing
4. Interior wall

Interior view

Not available

The following trim is not offered by HH Windows & Doors:
1. **Exterior casings**
2. **Interior casings**
3. **Stool (interior sill)**

Handles

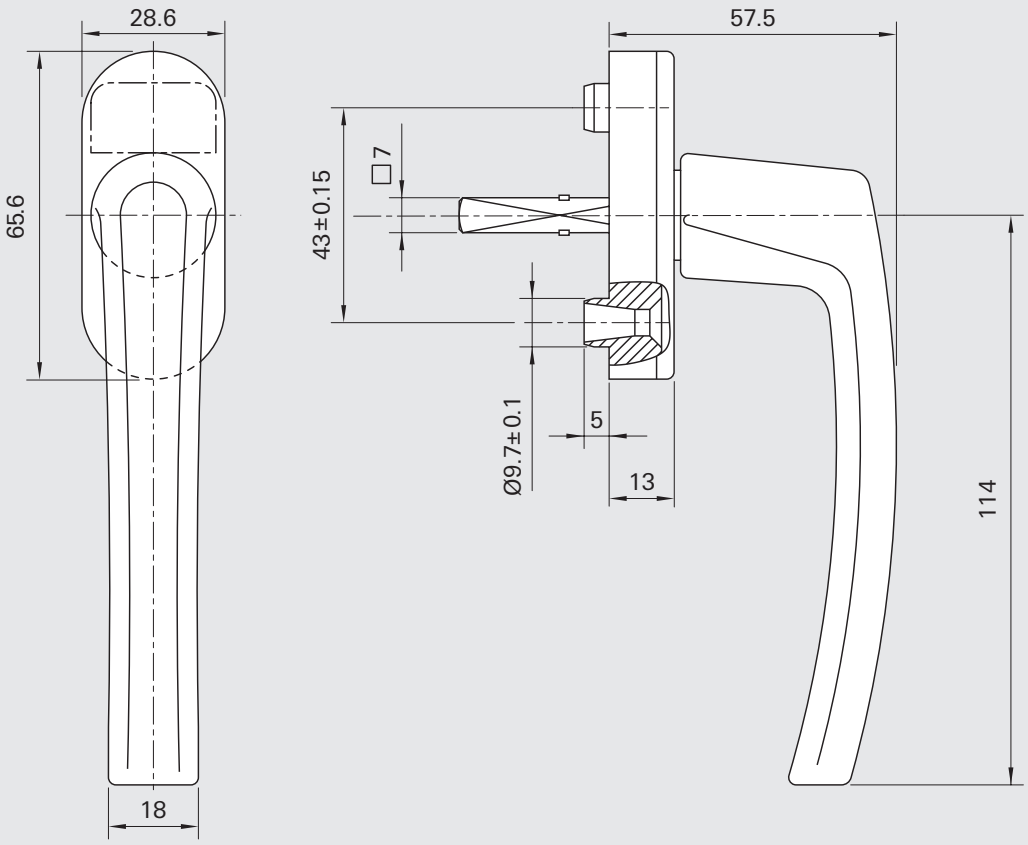
The tilt-turn window comes with a RotoLine tilt-turn handle, in either silver or medium bronze, without the Roto logo. The RotoLine handle is a modern and elegant handle manufactured in Germany by the founders of the tilt-turn hardware system.

R 01.1 anodised silver, F1

R 05.3 anodised medium bronze, C33

While HH Windows & Doors carries the Rotoline handle system, there are endless handle options available which can be purchased independent of HH Windows & Doors using the specifications provided below.

Spindle length: 30mm



Finishes

HH Windows & Doors offers a variety of finish options. Because of their high durability and superior performance, HH Windows & Doors uses penetrating finishes as opposed to film forming finishes. The result is an ultra low maintenance product that will last a lifetime.

1 Solid stain

Sikkens Rubbol
Rubbol is a water based, pigmented, solid color stain that looks just like paint. Rubbol can be custom matched to any color.

Advantages
Whereas paint forms a protective barrier over the wood, the Rubbol solid stain penetrates the wood, allowing it to expand and contract without cracking or peeling. Most importantly, the Rubbol solid stain does not trap moisture, allowing the wood to breathe.

The result
A far superior, durable finish with minimal maintenance required.

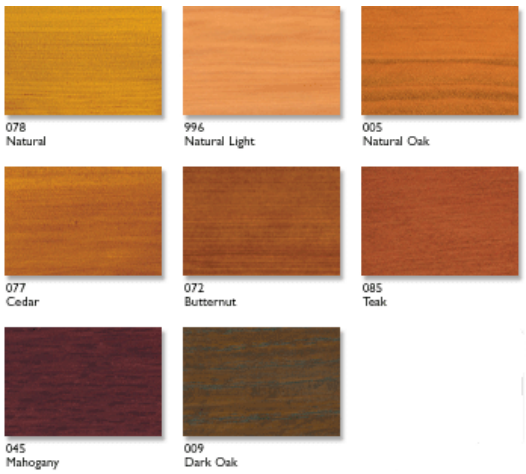
Rating: High exterior wood protection

Standard Rubbol colors:
Rubbol can be custom matched to any solid color and is not limited to these colors.

2 Semi-transparent stain

Sikkens Cetol
Cetol is a semi-transparent exterior finish specially formulated to provide a water resistant coating. A rich natural color and a unique alkyd/ oil layer protects against rain, snow and UV rays. Available in 8 natural, wood-toned colors.
Advantages
Maintains the natural beauty of wood.
The result
Superior UV protection, highly transparent, water repellent, weather resistant, flexible, breathable
Rating: Medium exterior wood protection

Cetol colors:



3 Clear finish

Clear Polyurethane (water based)
Engineered to serve as both a sealer and top coat system, OmniGold provides outstanding durability for a clear finish. OmniGold is a water based polyurethane finish with a built in UV blocker, and is environmentally safe and ecologically balanced.
Rating: Low exterior wood protection

Finish configurations

HH Windows & Doors offers several finish configurations: a uniform finish, a split finish, or no finish. Below is a description of the finish scenarios available:

Uniform finish

A uniform finish has the same finish on the interior as on the exterior.

1a.
Type: Sikkens RUBBOL solid color stain
Colors: all colors
coats: 2

1b.
Type: Sikkens Cetol 1 + 23 semi-transparent stain
coats: 3

No Finish

Ordering a window unfinished is not recommended and is generally done only in special cases. Our factory finish covers all surfaces and is applied prior to hardware, gasket, and glass installation.

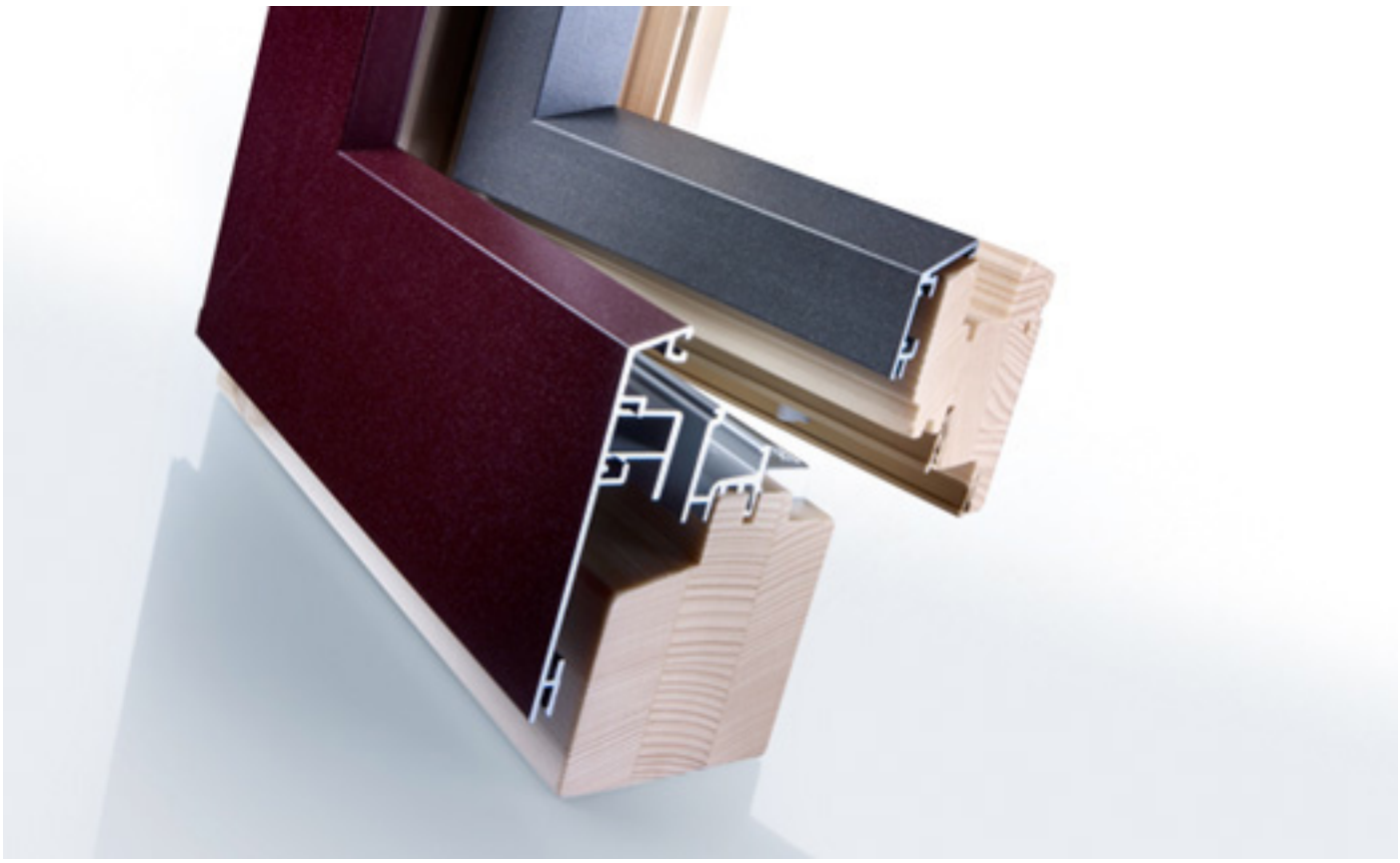
Split finish

A split finish has a different finish on the interior than on the exterior.

2a.
Type: Sikkens RUBBOL solid color stain (exterior), Sikkens RUBBOL solid color stain (interior)
Colors: all colors
coats: 2

2b.
Type: Sikkens RUBBOL solid color stain (exterior), clear polyurethane (interior)
Colors: all colors
coats: 2 exterior, 3 interior

2c.
Type: Sikkens
RUBBOL solid color stain (exterior),
Sikkens Cetol 1 + 23 semi-transparent stain (interior)
Colors: all colors
coats: 2 coats exterior, 3 coats interior



Aluminum cladding

HH Windows & Doors offers optional exterior aluminum cladding manufactured by Gutmann in Germany. All cladding profiles are made from heavy duty aluminum extrusions and incorporate back ventilation between the cladding and the exterior wood surface. Back ventilation prevents trapped moisture and allows the wood to breathe, which is essential for the longevity of the window.

Aluminum cladding colors

GUTMANN

Bausysteme
Building Systems

RAL Standard-Farben/Standard RAL colours

GUTMANN Farbfächer GUTMANN Colour Fan Deck

1013	Perlweiß / Oyster white
1015	Hellelfenbein / Light ivory
3003	Rubinrot / Ruby red
3004	Purpurrot / Purple red
3005	Weinrot / Wine red
3011	Braunrot / Brown red
5002	Ultramarinblau / Ultramarine blue
5003	Saphirblau / Sapphire blue
5007	Brillantblau / Brillant blue
5008	Graublau / Grey blue
5011	Stahlblau / Steel blue
5014	Taubenblau / Pigeon blue
5023	Fernblau / Distant blue
6005	Moosgrün / Moss green
6009	Tannengrün / Fir green
6012	Schwarzgrün / Black green
7001	Silbergrau / Silver grey
7004	Signalgrau / Signal grey
7011	Eisengrau / Iron grey
7012	Basaltgrau / Basalt grey
7015	Schiefergrau / Slate grey
7016	Anthrazitgrau / Anthracite grey
7021	Schwarzgrau / Black grey
7022	Umbragrau / Umbra grey
7024	Graphitgrau / Graphite grey
7031	Blaugrau / Blue grey
7035	Lichtgrau / Light grey
7036	Platingrau / Platinum grey
7037	Staubgrau / Dusty grey
7038	Achatgrau / Agate grey
7039	Quarzgrau / Quartz grey
7040	Fenstergrau / Window grey
7045	Telegrau 1 / Telegrey 1
7046	Telegrau 2 / Telegrey 2
7047	Telegrau 4 / Telegrey 4
8001	Ockerbraun / Ochre brown
8003	Lehmbraun / Clay brown
8007	Rehbraun / Fawn browne
8011	Nussbraun / Nut brown

Mikrolierte Oberflächen / Micro-polished surfaces

M1/C31	Edelstahllook / Stainless-steel look

Trendfarben / Trend colours

tr01	Trendblau / Trend blue
tr06	Trendgrün / Trend green
tr08	Trendweiß / Trend white
tr05	Trendrot / Trend red
tr02	Trendgrau / Trend grey

Baubronze-Design / Bronze design

029/60995	Baubronze mf matt / Bronze mf matt
029/60990	Baubronze metallic glatt matt Bronze metallic smooth matt

Strukturdesign / Structure design

029/50370	Grün sprenkel / Green speckle
029/80081	Ironglimmer P 7 / Iron glimmer effect P7
029/30401	ca. RAL 3004 matt/mf approx. RAL 3004 matt/mf
029/90092	Silberglimmer fs matt/mf Silver glimmer effect fs matt/mf
029/40782	Dark blue / Dark blue

RAL Standard-Farben/Standard RAL colours

GUTMANN Farbfächer GUTMANN Colour Fan Deck

8014	Sepiabraun / Sepia brown
8016	Mahagonibraun / Mahogany brown
8017	Schokobraun / Chocolate brown
8019	Graubraun / Grey brown
8022	Schwarzbraun / Black brown
9001	Cremeweiß / Cream
9006	Weißaluminium / White aluminium
9007	Graualuminium / Grey aluminium
9010	Reinweiß / Pure white
9011	Graphitschwarz / Graphite black
9023	Perldunkelgrau / Pearl dark grey

Decoralfarben / Decoral colours

MKW 01	Douglas 1 / Douglas 1
MKW 02	Douglas 2 / Douglas 2
MKW 03	Kirsch 1 / Cherry 1
MKW 04	Kirsch 2 / Cherry 2
MKW 05	Eiche 1 / Oak 1
MKW 06	Eiche 2 / Oak 2
MKW 07	Kiefer 2 / Pine 2
MKW 08	Golden Oak 1 / Golden Oak 1
MKW 09	Golden Oak 2 / Golden Oak 2
MKW 10	Mahagoni 1 / Mahogany 1
MKW 11	Antik 1 / Antique 1
MKW 12	Nuss 1 / Walnut 1

Eloxalfarben / Anodised colours

E6/EV1	Natur / Natural
E6/G216	Dunkelbronze / Dark bronze
E6/G214	Mittelbronze / Middle bronze

Metalldesign Feinstruktur matt / Metallic design Fine structure matt

029/80341	Schwarz metallic / Black metallic
029/41100	Blau metallic / Blue metallic
029/72100	Grau metallic / Grey metallic