

TECHNOLOGY IN MOTION



MACO RAIL SYSTEMS

SLIDING HARDWARE



For a harmonic confluence inside and out

LIFT&SLIDE HARDWARE
TIMBER



A timber window realises the desire to let nature become part of your living space. Spirited and elegant. Large glazing units made of timber flood the room with daylight. Heat and cold are kept where they belong. By nature, timber provides enhanced thermal insulation. Rain and wind make no impact on the multi-glazing units. In the summer, simply slide the timber/glass unit to the side — no matter whether 150, 300 or 400 kg in weight. Safe, comfortable and, above all, feather-weight and user-friendly.



The Lift&Slide hardware system for timber units



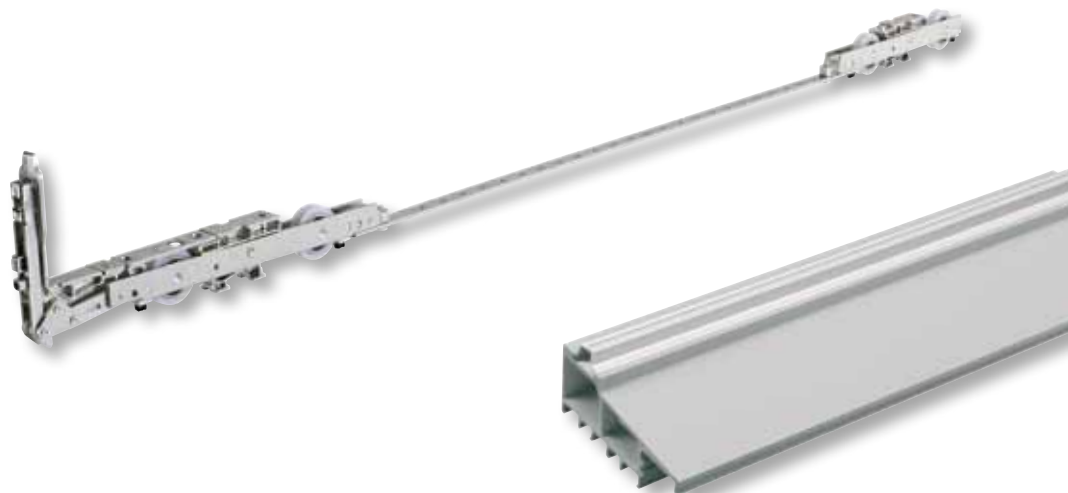
Made by MACO



Lift&Slide hardware, standard and additional rollers and the unique performance characteristics of the GRP threshold are in-house MACO developments. Lift&Slide drive gears, including accessories, are manufactured at MACO's Austrian location in Trieben according to DIN EN ISO 9001:2008 quality standards.

The fundamental benefits of Lift&Slide hardware

- Straightforward installation of the hardware
- Maintenance-friendly
- Individual rail systems
- Threshold made of GRP (glass-fibre reinforced polymers)
- Insert profiles for enhanced energy savings
- Aluminium threshold with thermal break
- Solution suitable for wheelchairs
- Extremely corrosion-resistant TRICOAT-plus available as an option





Lift&Slide roller

Smooth-running, silent action:

The standard 150 kg Lift&Slide roller can be used for sash weights up to 150 kg; the 300 kg Lift&Slide roller up to a maximum of 300 kg.

Sash weights up to 400 kg move like feather-weights when an additional roller is used. The patented suspension system effectively

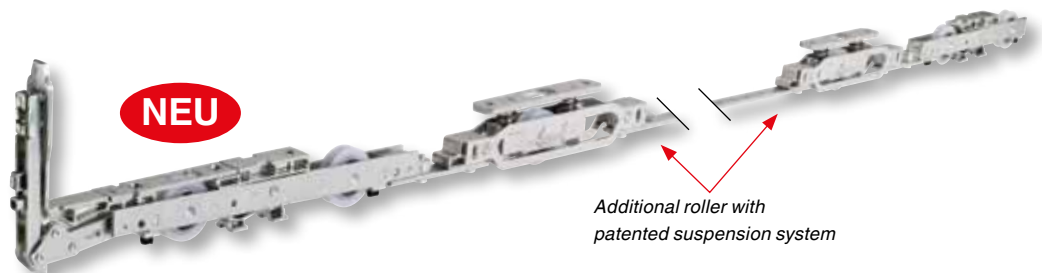
reduces the manual effort required. One additional roller can lift up approx. 80 kg of sash weight.



150-kg MACO Lift&Slide roller



300-kg MACO Lift&Slide roller



400-kg MACO Lift&Slide roller

Standard Lift&Slide roller		
Lift&Slide sash weight	MACO Lift&Slide roller	MACO Addition roller
150 kg	2	-
300 kg	2	-
400 kg	2	2



With brush technology



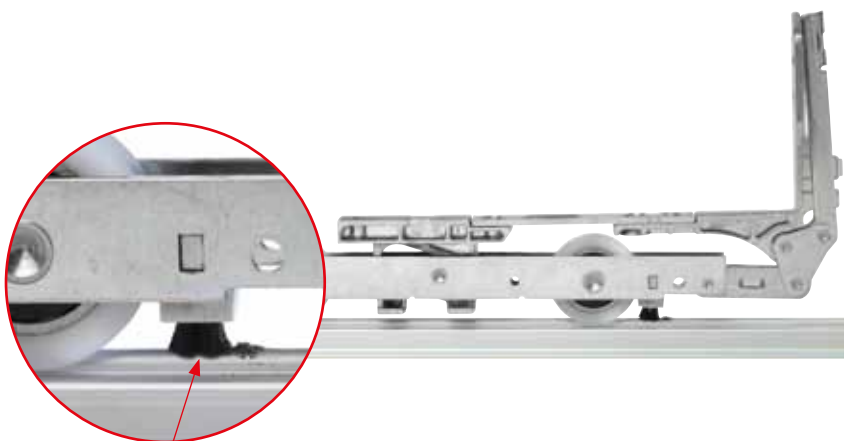
Keep on moving



Construction dust, sand grains, hairs from domestic pets, small stones from the garden. Dirt always accumulates, no matter whether during installation or in day-to-day use. On the roller, it becomes an unwanted braking mechanism. Gradually it finds its way into the roller. And the unit stops running smoothly. What could be better than simply brushing this dirt away? And this is just what the brushes do. A brush

is located on each roller. These brushes remove the dirt from the roller track each time it is operated. This guarantees a smooth running of the rollers over the long term. The brushes are included as standard on Lift&Slide rollers for PVC units.

Special brushes that match the roller technology are used. During production of these brushes, each individual hair is embedded securely the brush head. The brush hairs are arranged slightly slanted to ensure an optimum brushing action in the rounded roller track. This ensures a constant cleaning process over the entire service life.



The brush technology on the MACO Lift&Slide roller: A brush is located on each roller.

A two-part (in total four-wire) roller carriage is used for each sash unit. The brushes always act in the direction of travel in front of the roller: four rollers, four brushes; always in motion.



Less operating effort



The modified corner deflection optimises the lifting mechanism of the roller. Together with the new Lift&Slide drive-gear, the lifting mechanism significantly reduces the operating effort required.

The new kinematics bring savings of around 15 percent.

This reduces the effort required by operator to move the Lift&Slide unit by about 1 Kg!

In concrete term, this means: If you had to lift up 6Kgs in the past to move 200 kg sash, for example, you now only need to lift 5 Kgs.





The new Lift&Slide drive-gear

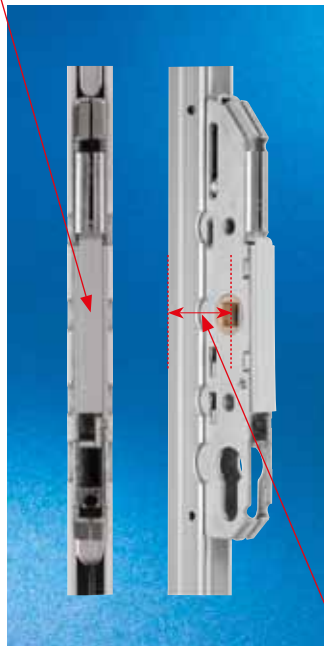
The new drive gears can accommodate up to four locking bolts. Holes are already provided for two locking bolts, and pre-stamped on the drive gear for a further two. Four locking bolts make for

- Sash height from 730 to 2860 mm for Backset 27.5 or 37.5 mm

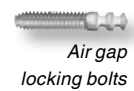
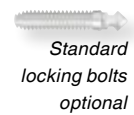
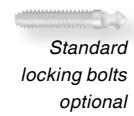
enhanced burglar protection. The new head shape of the locking bolts improves the sash lift and enhances the unit's aesthetic design.

- Drive gear available in the colours silver, brown and bronze

Rear cover protects against soiling, and can be dismantled as required



27.5 mm
37.5 mm
backset



The locking points are pre-stamped and easy to open when needed



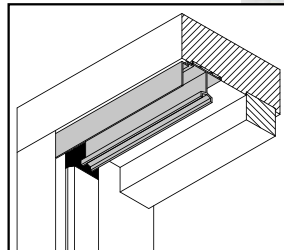
Top guide tracks



Full solutions

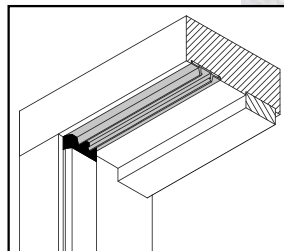
The complete series of top guide tracks are highly functional and top-quality products.

Frame cover available in silver and black



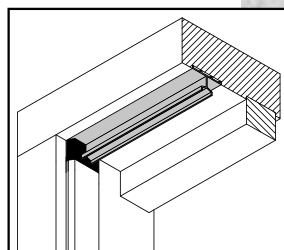
"Covered" system

- For 56 or 68 mm sash thickness
- 27 mm distance between sash and frame



"C" system

- For 56 to 110 mm sash thickness
- Only 12 mm distance between sash and frame
- Guide track C can be used on the top and bottom



"Universal low" system

- For 56 to 110 mm sash thickness
- Only 12 mm distance between sash and frame



Versatile applications for GRP threshold



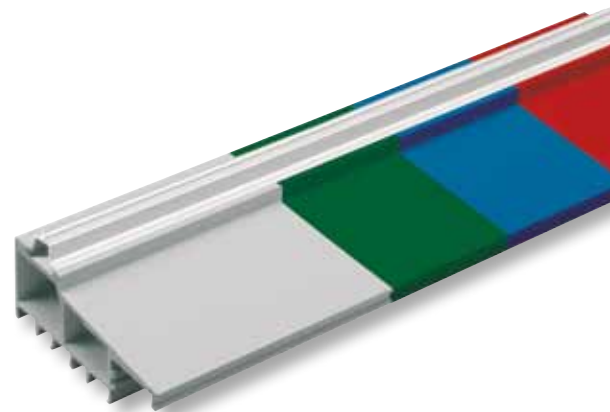
The GRP threshold sets new standards for variable widths, surface properties and energy savings. It implements two sash levels as standard

and can be used for up four different sash levels. A full capabilities unfold when it is used with a 16-meter long, 8-sash Lift&Slide unit. The

commissioned window maker himself has developed and implemented this solution.

Your benefits at a glance

- No thermal break required
- Effective insulation against heat or cold
- Ideal solution for thermal bridges
- Perfect seal
- Extremely low material expansion
- The material is insensitive to heat and frost
- Heavy-duty surface
- Single-part design – no need for costly customised floor thresholds
- Width extendible to 308 mm and beyond
- Optimum opening comfort
- Light and quiet slide operation
- Wheelchair-suitable solution – only 17 mm high
- Several sash levels possible
- Program expansion for timber
- Applicable for all systems A to L



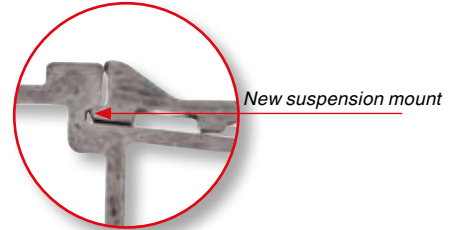
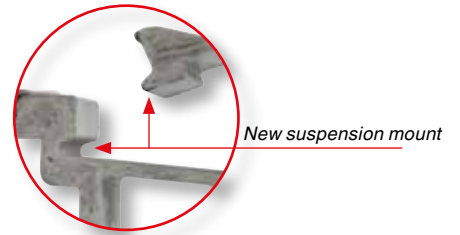
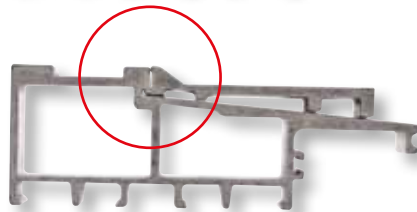
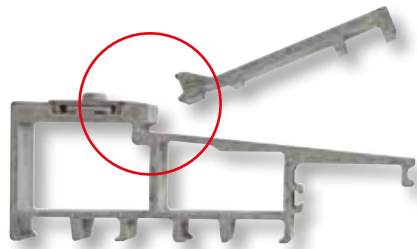


All GRP intermediate profiles with new suspension mount

The new suspension mount for GRP basic profiles and

intermediate profiles prevents the intermediate profiles

moving up into the interior area.



Extension options

The basic profile for the MACO GRP threshold comes in exit widths from 140 to 180 mm. Simple extension

profiles can be used to extend these basic profile to 308 mm for example. If required, further extensions can be

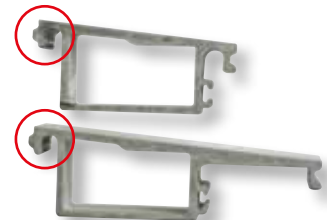
added for extra width. Theoretically, the maximum width is unlimited.



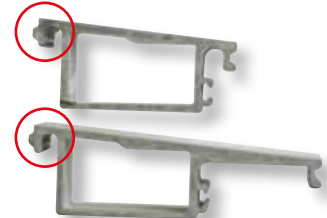
180 mm basic profile with high roller track



140 mm basic profile with flat roller track



128 mm or 88 mm extension profiles



128 mm or 88 mm extension profiles

Basic profile 180 + 88 or 128 mm extension profile with flat or high roller track
Basic profile 140 + 88 or 128 mm extension profile with flat or high roller track



Basic profile 180 mm, Swiss design

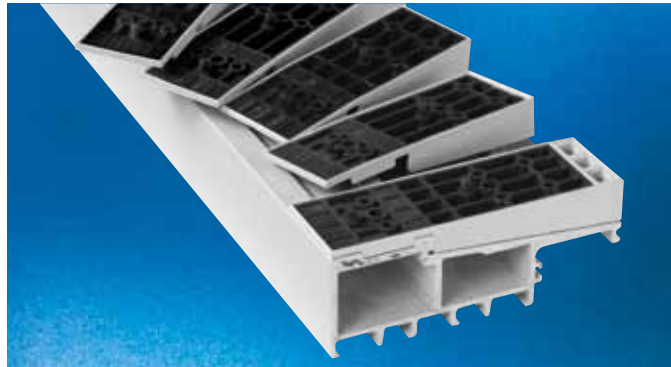


Connection plates

The associated connection plates that accommodate the frame section complete the threshold. The versatility of

GRP thresholds with profile thickness from 56 to 110 mm gives the processors of timber profiles the

independence they want. MACO GRP thresholds can be used for up to four sash levels.



The connector plates are available in the following sizes:

- 158 mm / 56 mm
- 164 mm / 56 mm
- 180 mm / 56 mm
- 216 mm / 56 mm
- 260 mm / 56 mm



MACO 180 mm GRP basic profile with 164 mm connection plate



MACO 180 mm GRP basic profile with 128 mm extension and 260 mm connector plate



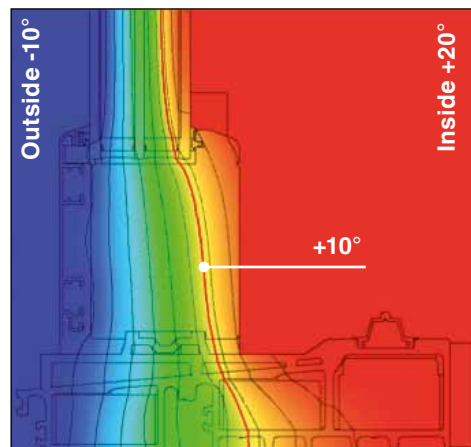
Even higher energy savings using insert profiles



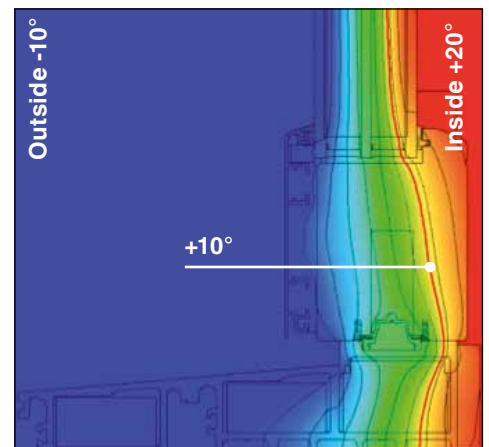
The low heat transfer coefficient of the GRP threshold makes a thermal break superfluous. If the insert profile sections are used, the threshold achieves a sensational U-value.

The insert profiles are available as an option and can be ordered individually from MACO as required.

Calculated Isotherm characteristics



Isotherm characteristics, e.g.: Timber-aluminium unit "Alto Nova" with insert profile/ **fixed sash**



Isotherm characteristics, e.g.: Timber-aluminium unit "Alto Nova" with insert profile **movable sash**

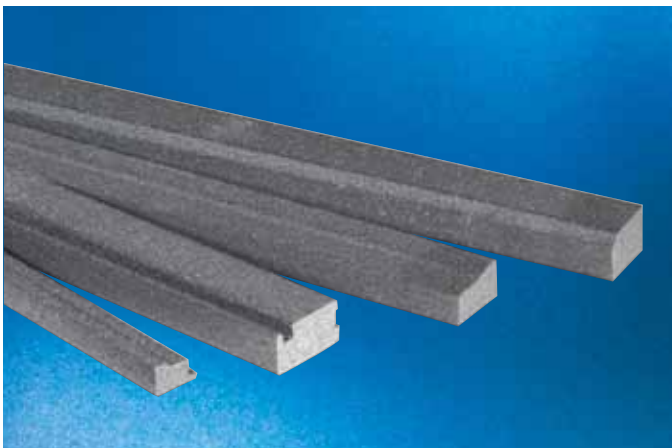


Using 10 running meters of MACO GRP threshold including insert profile achieved saving on heating oil in a detached home compared to a conventional aluminium threshold with thermal break of around 25.6 litres per annum.

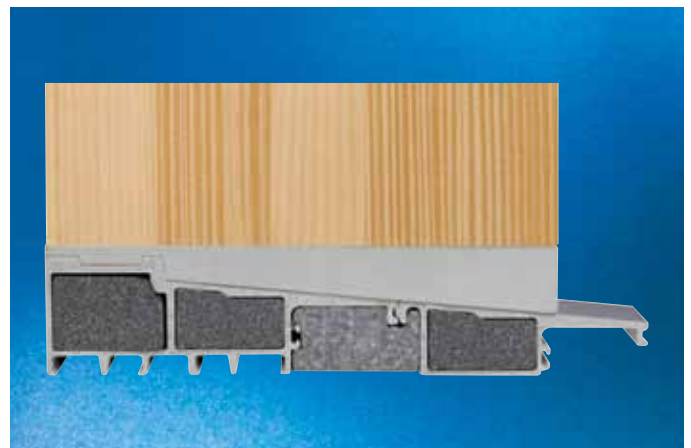
That corresponds to around 2.6 litres per running meter. Projected over 10 years, the MACO GRP threshold saves an impressive total of 260 litres for a detached house.



The MACO GRP basic profile and the insert profile can achieve an U value of $0.82 \text{ W}/(\text{m}^2\text{K})$.



Insert profiles for MACO GRP basic profiles and extension



MACO GRP threshold with insert profiles



New frame cover made of aluminium and GRP



Particularly when renovating or refurbishing, the floor construction often restricts the height available. However, this does not mean that builder must abandon attractive Lift&Slide solutions.

Alter all, the frame cover is an ideal solution for the almost flat design. To satisfy the different regional requirements for temperature and climate, the frame cover is available in two different

materials. Use the frame cover made of aluminium without thermal break when cold and condensation can be ruled out as environmental parameters.

Aluminium frame cover 164 mm

- Installation height 25 mm
- Wheelchair-suitable solution –only 17 mm flat
- Ideally suitable for renovation and refurbishing work
- Flat, and high roller track



*Cross-section
GRP frame cover 164 mm*

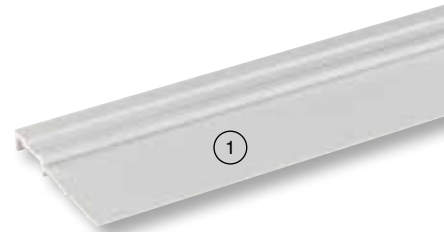


If the climatic conditions demand more stringent requirements, frame covers made of glass-fibre reinforced

plastic are recommended. GRP provides effective insulation against heat and cold.

- ① **GRP frame cover 164 mm**
- ② **GRP frame cover 184 mm**
- ③ **GRP frame cover 200 mm**

- Installation height 25 mm
- Wheelchair-suitable solution –only 17 mm high
- No thermal break required
- Heat and frost-resistant material
- Extremely low material expansion
- Ideally suitable for renovation and refurbishing work
- Flat, and high roller track



*Cross-section
GRP frame cover 164 mm*



*Cross-section
GRP frame cover 184 mm*



*Cross-section
GRP frame cover 200 mm*



Aluminium bottom roller track



① "Threshold" system

- Suitable for wheelchairs – only 15 mm high
- Clip-on underlay profile for the frame cover
- With thermal break

② "Frame cover system"

- Suitable for wheelchairs – only 15 mm high
- Specially for 4-sided timber frame designs
- With thermal break
- Enhanced seal due to additional, optional clip-on track for guide rail

③ "Bottom roller C" system

- Guide frame C can be used at the top and bottom, simply attach the snap-on track
- Snap-on tracks are interchangeable at any time
- Concealed screws

④ "Bottom flat roller" system

- Installs on the finished floor
- Suitable for wheelchairs

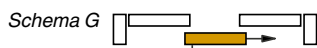
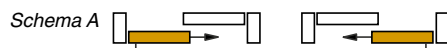


Use in various systems



Example for diagram D

DIN left or DIN right



Example for system A



System test for Resistance Class 2 (RC 2) in barrier-free design



The system test to Resistance Class 2 (RC 2) is certified in accordance with testing guidelines to EN V 1627-1630 for a system in 68 mm timber (spruce) with insulated glazing. The scope of validity covers designs A, C, D, E, F, K and L, starting from drive-gear size 2 to drive-gear size 7.

The scope of testing includes the two guide tracks

with cover and universal bottom and top flat rollers. So, the rollers are also covered. By testing the system with flat rollers, RC-2-compliant production to meet the requirements for barrier-free applications is also ensured.

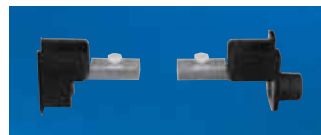
For Resistance Class 2 (RC 2), the standard Lift&Slide hardware is complemented by two safety catches, drilling protection,

the Lift&Slide sealing rail and RC 2 locking bolts. The locking bolts match the various designs.

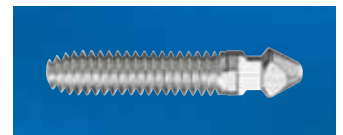
To produce standardized burglar-proof Lift&Slide units in RC 2, window makers can obtain the MACO system test as a licensee.



The lock case is reinforced with a hardened steel plate. The size of the steel plate is sufficient to cover the entire lock case, thereby providing effective protection against drilling.



The safety catch is installed at the top of the sash and in the corners on the right. These can be set to reduce the top gap at the guide track.



The special RC 2 locking bolt locking bolt is produced in-house and is made of solid steel. Its material ensures permanent stability. To achieve Resistance Class 2 (RC 2), at least four RC 2 locking bolts must be used.



Lift&Slide sealing rail



Horizontal installation

Your benefits at a glance

- Improved seal
- Enhanced burglary protection to RC 2
- Sealing profiles for 28 mm sash distance
- Horizontal and vertical installation possible



Vertical installation





Systematic testing

It is good to know that MACO Lift&Slide hardware can guarantee domestic convenience and home comfort with top performance for large units. The larger the glazing, often

in locations that are exposed to increasingly harsh and unpredictable weather conditions, the more demanding the requirements for window and door unit. Whereas air permeability is

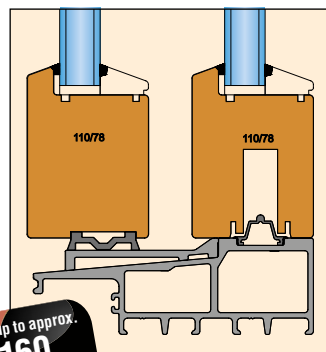
relatively simple to achieve, water-tightness and resistance to wind loads present special challenges for the design.



System test Holzforschung Austria, Vienna (HFA)

Lift&slide timber unit / 3000 times 2500 mm / 78 mm
Sash thickness: seal quality to "low-E" housing standard, 1350 kg wind load, water-tightness up to approx. 160 km/h

- Air permeability Class 4 / EN 12207 (test according to EN 1026)
- Wind Load Resistance Class C3 / EN 12210 (test according to EN 12211)
- Water-tightness, Class E1200 / EN 12208 (test according to EN 1027)

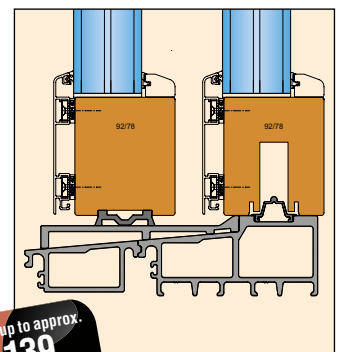


System A

System test ift Rosenheim

L&S timber unit / 4500 times 2500 mm "Alto Nova" / 78 mm
Sash thickness: seal quality to "low-E" housing standard, 1350 kg wind load, water-tightness up to approx. 139 km/h

- Air permeability Class 4 / EN 12207 (test according to EN 1026)
- Wind Load Resistance Class C3 / EN 12210 (test according to EN 12211)
- Water-tightness, Class E900 / EN 12208 (test according to EN 1027)



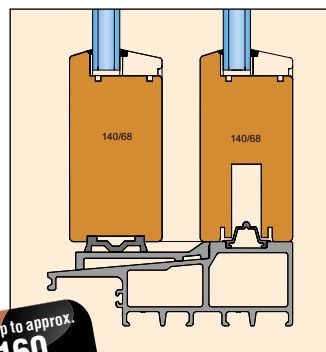
System A



System test ift Rosenheim

Lift&slide timber unit / 2890 times 2390 mm / 68 mm
Sash thickness: seal quality to "low-E" housing standard, 1350 kg wind load, water-tightness up to approx. 160 km/h

- Air permeability
Class 4 / EN 12207
(test according to EN 1026)
- Wind Load Resistance
Class C3 / EN 12210
(test according to EN 12211)
- Water-tightness, Class
E1200 / EN 12208
(test according to EN 1027)



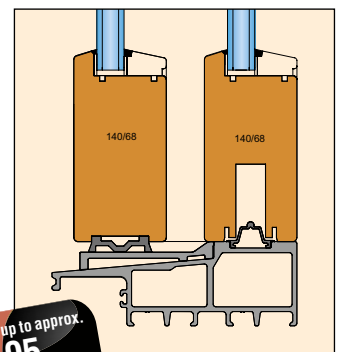
Resists heavy rain
up to approx. **160**
km/h

System A

System test Holzforschung Austria, Vienna (HFA)

Lift&slide timber unit / 6000 times 2700 mm / 68 mm
Sash thickness: seal quality to "low-E" housing standard, wind load, water-tightness up to approx. 95 km/h

- Air permeability
Class 4 / EN 12207
(test according to EN 1026)
- Wind Load Resistance
Class C1 / EN 12210
(test according to EN 12211)
- Water-tightness
Class 8A / EN 12208
(test according to EN 1027)



Resists heavy rain
up to approx. **95**
km/h

System C



Interior and exterior in unison



Product details for Lift&Slide system A

- Lift&Slide system A with large fixed section
- Timber/aluminium design
- 88 mm profile thickness + 16 mm aluminium tray
- Universal low guide track
- GRP threshold
- GRP basic frame 140 mm + extension 88 mm



Product details for Lift&Slide system A

- Timber/aluminium design
- 88 mm profile thickness + 16 mm aluminium tray
- Universal low guide track
- Bottom C roller track
- Triple-pane glazing



Product details for Lift&Slide system G

- Timber/aluminium design
- 88 mm profile thickness + 16 mm aluminium tray
- Universal low guide track
- Bottom C roller track
- Triple-pane glazing

**MACO
RAIL SYSTEMS**



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