

# Folding Shutters





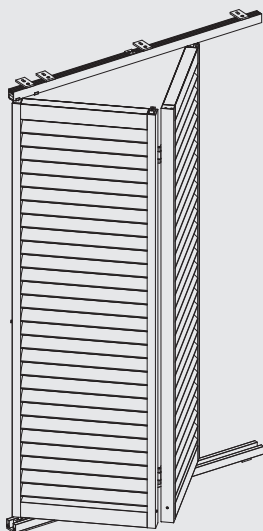
# Transformation

Folding shutters provide the architect with an even more dramatic way to use sun control for a dynamic building appearance. Flush with the facade in closed position and projecting out in open position, folding shutters transform the facade from a monolithic shape to a transparent structure in seconds.

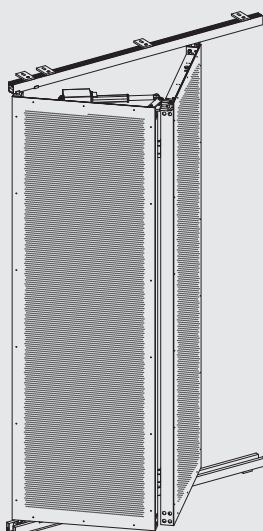
- Folding Shutters are available with fins or perforated sheet. Custom materials on request.
- Sheet metal is available in two perforations with 5% and 10% openness. Custom perforations also possible.
- Folding shutters can be manually operated or motorized with a flat folding hinge mechanism.



## The line up



FOLDING LOUVRE SHUTTER



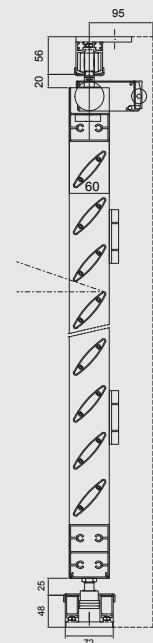
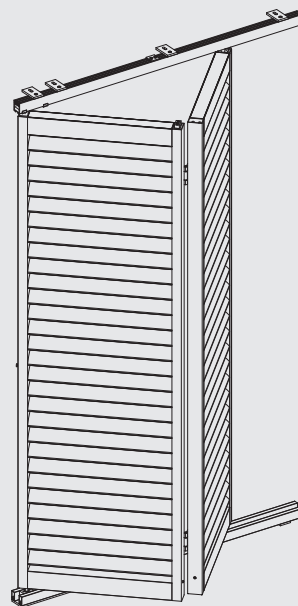
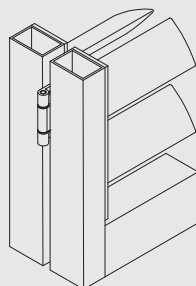
PERFORATED FOLDING SHUTTER

# Louvre Folding Shutters

Folding shutters offer an even more dynamic '3D' appearance to a facade than sliding shutters. Folding louvre shutters can fold open to a position almost perpendicular to the facade, offering a unobstructed view to the outside. Each of our six fin types can be used to achieve the preferred and optimised level of natural daylight entering into the building. At the same time, the fins in the shutterframe will block direct sunlight all year round. Upon request, Morag can advise in detail in order to guarantee a functional and bespoke solution for each project, challenging as it might be.

## Key features

- Folding shutters change the facade appearance instantly from closed to open
- Manually operated or motorized; both closing completely flat
- Available as single pair (V) or double pair (W, manual only)
- Choice of six louvre shapes in extruded aluminium and Western Red Cedar wood
- Totally weather resistant and low in maintenance
- Custom designs or alternative materials possible





# Louvre profile

The folding louvre shutter has an aluminium box profile frame for rigidity and torsion stiffness. Of the six available fin types there is a choice of three modules for a more closed, medium or more open configuration. A more closed fin configuration provides the best shading while a more open configuration allows the best outward view.

Modules for fixed fins	Resulting shading angle		
	7°	20°	34°
Fintype			
Alu Rounded 60x10	47	57	70
Alu foil 70x15	60	70	84
Alu/Wood rhomboid 68x16	53	65	81
Alu S 70x48	76	87	102
Alu Z 70x48	76	87	102

## Maximum Dimensions

The panel width for a Folding Shutter can vary from 530 to 900 mm and the height can be up to 3400 mm, depending on situation and wind load. The shutter can be larger when the distance between fixed and sliding rotation points in this open situation is increased. There are two options for this "hinge spacing": 150 mm or 250 mm. The two graphs show the maximum panel dimensions as a function of the maximum wind load for each of these options.

## Materials and Finishes

The Louvre Shutter can be anodized in a natural silver colour or a range of alternative colours and shades. For an even wider choice of colours and designs the shutters can be powder coated in any RAL colour or to a specific colour requirement.

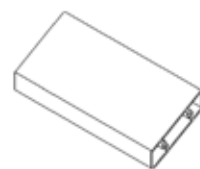
Morag also provides the highest standard sublimation finishes: a durable powder coated finish with a superb look of wood or patinised metal. Western Red Cedar can be used without finish in outside conditions, resulting in a beautiful silver grey tone. Alternatively the wood fins can be provided with a transparent nano coating that with regular maintenance will preserve the original red brown appearance.



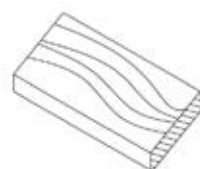
**Fin Alu rounded 60x10**  
Fixed system  
Material: Aluminium



**Fin Alu foil 70x15**  
Fixed system  
Material: Aluminium



**Fin alu rhomboid 68x16**  
Fixed system  
Material: Aluminium



**Fin WRC rhomboid 68x16**  
Fixed system  
Material: Western Red Cedar



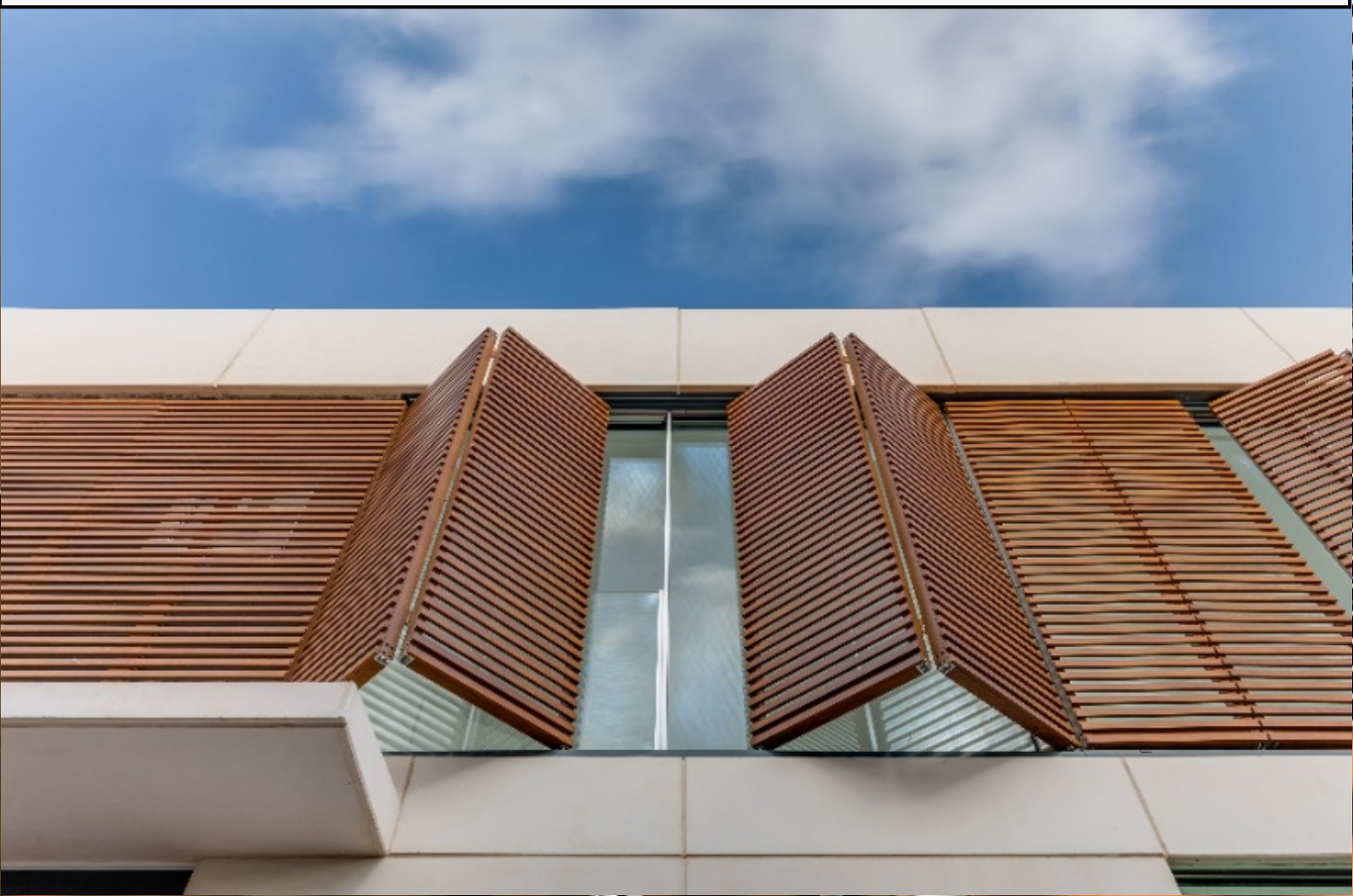
**Fin Alu S 70x48**  
Fixed system  
Material: Aluminium



**Fin Alu Z 70x48**  
Fixed system  
Material: Aluminium



Tzukei Arsuf-Ga'ash, Israel  
architect: Ilan Pivko  
product: Folding shutter







**Micha 24**  
Tel Aviv, Israel

Architect : Bar Orian  
Product : Folding Shutters

### Aesthetic options

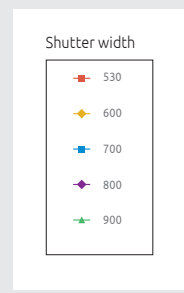
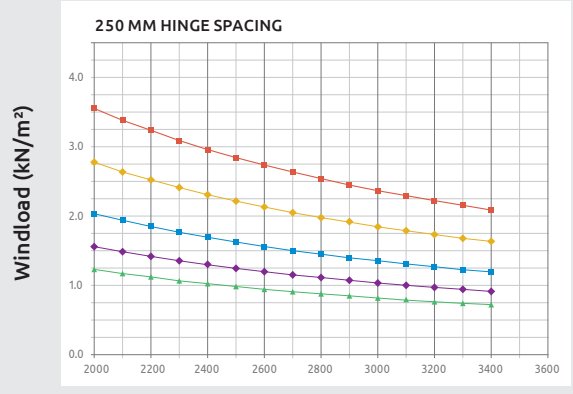
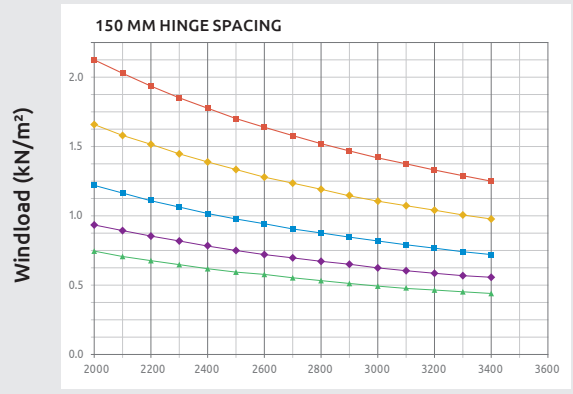
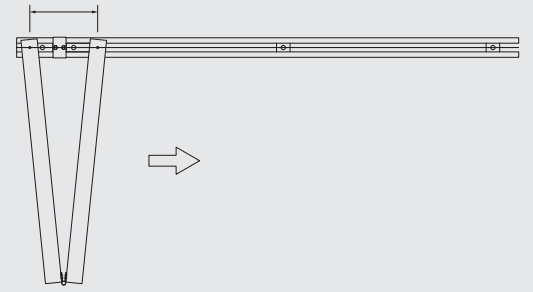
Sliding and Folding Shutters from Morag give architects many aesthetic options with a broad range of designs, materials and finishes. Manual or motorized, the system offers maximum flexibility in easy-to-reach as well as out-of-the-way spaces or when an overall building management is required.

### Built to last

With long-lasting extruded aluminium profiles, aluminium sheets, durable surface treatments and stainless steel fixing materials our Shutters are built to last a building's lifetime. All accessories are designed and manufactured to meet the highest standards and result in a durable, reliable and low-maintenance Sun Control System.

### Folding Shutters Spantables

Hinge spacing 150 or 250 mm



# Perforated Folding Shutters

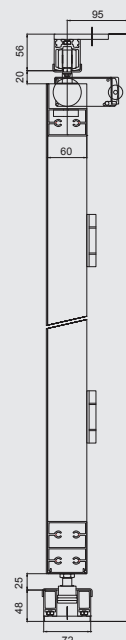
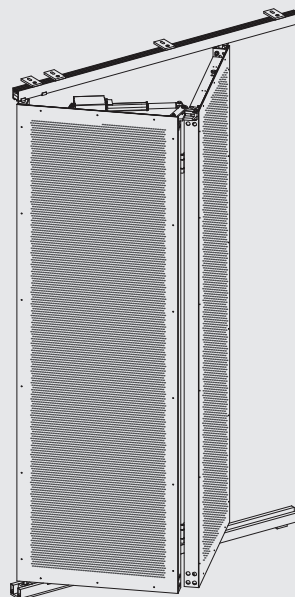
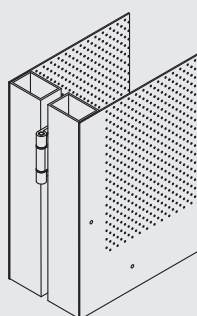
The use of a perforated aluminum sheet provides the right balance between optimal shading and required privacy. A perforated folding shutter allows a view to the outside even when the shutters are fully closed. By combining a specific perforation pattern and openness the design possibilities literally become endless. In situations with large glass surfaces and limited space next to the windows, folding shutters typically allow an enlarged open view to the outside.

Goldwing  
Gent, Belgium

Architect: Bontinck architecten  
Product : Perforated Folding Shutters

## Key features

- Folding shutters change the facade appearance instantly from closed to open
- Manually operated or motorized; both closing completely flat
- Available as single pair (V) or double pair (W, manual only)
- Perforated aluminium sheet filters direct sunlight, allows outward view and reduces up to 90% of solar radiation
- Totally weather resistant and low in maintenance
- Custom perforation designs or alternative materials possible



# Perforations

As a standard the Morag Folding Shutter panel is offered with a choice of two perforations with a 5% or 10% openness to give the best functionality for visual and thermal interior comfort. As an alternative any custom perforation or pattern may be applied, providing the opportunity for project specific façade designs.

## Maximum Dimensions

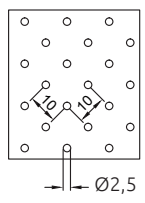
The panel width for a Folding Shutter can vary from 530 to 900 mm and the height can be up to 3400 mm, depending on situation and wind load. The shutter can be larger when the distance between fixed and sliding rotation points in this open situation is increased. There are two options for this "hinge spacing": 150 mm or 250 mm. The two graphs show the maximum panel dimensions as a function of the maximum wind load for each of these options.

## Materials and Finishes

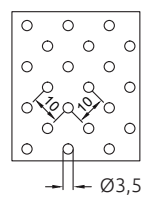
The perforated front sheets on the folding shutter are typically produced in 2 mm aluminium. Frame and sheet can be powder coated with a durable polyester powder coating in a any RAL colour or anodized in natural silver or a range of other colours.

## Frame

The perforated folding shutter has an aluminium box profile frame for rigidity and torsion stiffness. The aluminium perforated sheet is fixed to the front of the frame with screws or pop rivets.



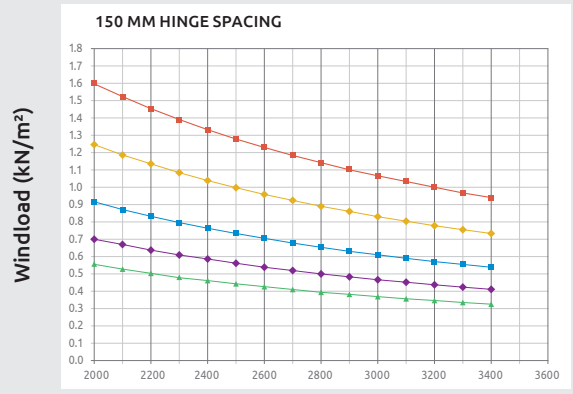
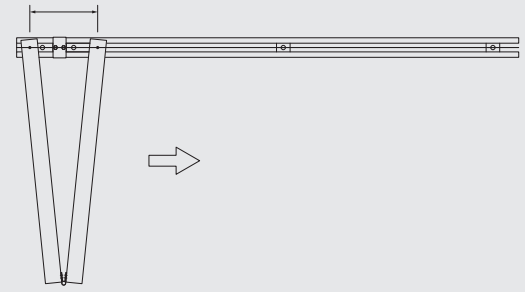
**Perforation A**  
R2,5 Z10x10  
Openness 5%



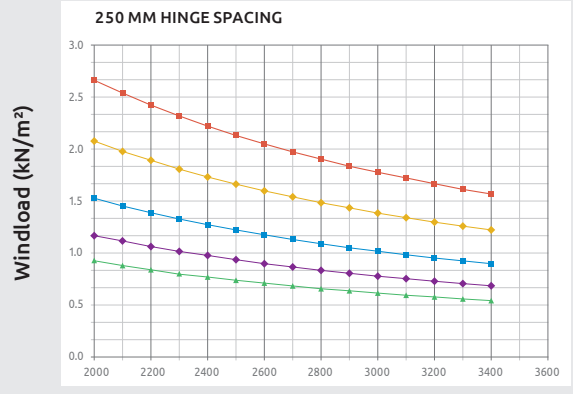
**Perforation B**  
R3,5 Z10x10  
Openness 10%

## Folding Shutters Spantables

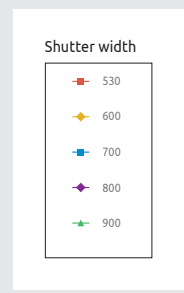
Hinge spacing 150 or 250 mm



Shutter Height (mm)



Shutter Height (mm)





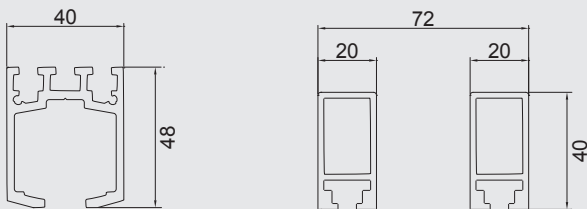
# Technical Details

## Top & Bottom Details

Morag Folding Shutters come with a complete range of rail profiles, runners and accessories. All rail profiles are extruded aluminium, anodized or powder coated to project specifications. Top and bottom runners, hinges and rotation points are made of aluminium, stainless steel and quality grade plastics to ensure maintenance-free functionality for many years.

## Folding Shutter System Dimensions

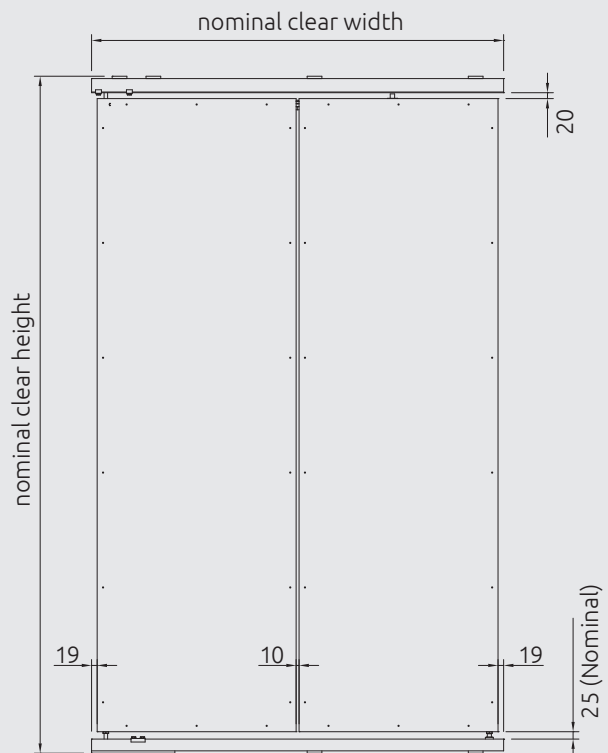
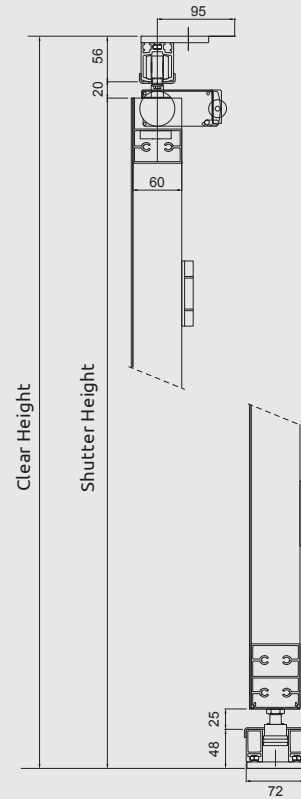
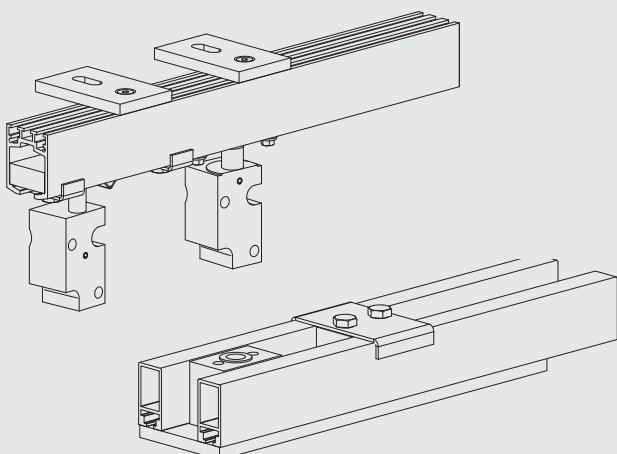
Folding Shutters are measured in their total bay width and height, including top and bottom rails and vertical side gaps. Vertical gaps are necessary to allow the panels to rotate.



**Top Rails**  
40x48  
Material: Aluminium

**Bottom Rails Box**  
20x40  
Material: Aluminium

## Top and bottom rail fixing for folding shutter

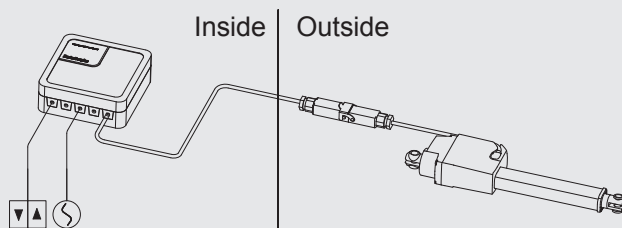
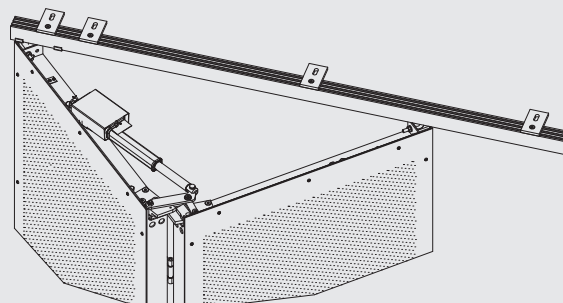


### Folding Shutter Motorisation

Morag Folding Shutters can be motorized with a specially engineered hinge mechanism operated by a compact 24V linear actuator. This clever mechanism enables the shutter to close completely flat.

Shutters can be motorized to function in places without personal acces or simply for a more comfortable use. Motorisation also allows automation by clock or sun sensor and operation via a building management system.

Every motor works with an electronic controller that is placed inside the building. This controller regulates motor speed and stops the shutter when an obstacle is met.



### Folding Shutter Manual Locking

A manual folding shutter can be locked in its fully open and fully closed position. An espagnolette is used for the fully closed (flat) position. The espagnolette is placed in one of the vertical frame profiles and locks inside the opening of the top rail. A hook and pin are used for the fully opened position.

