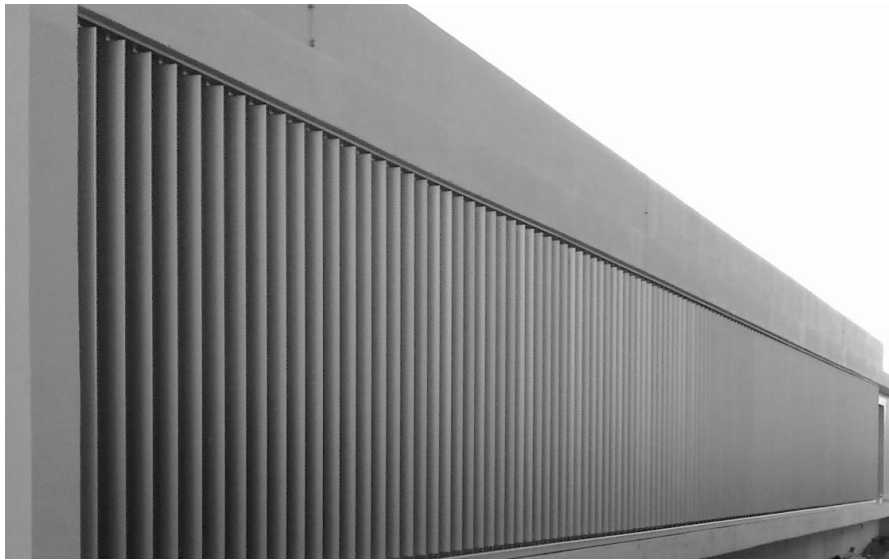
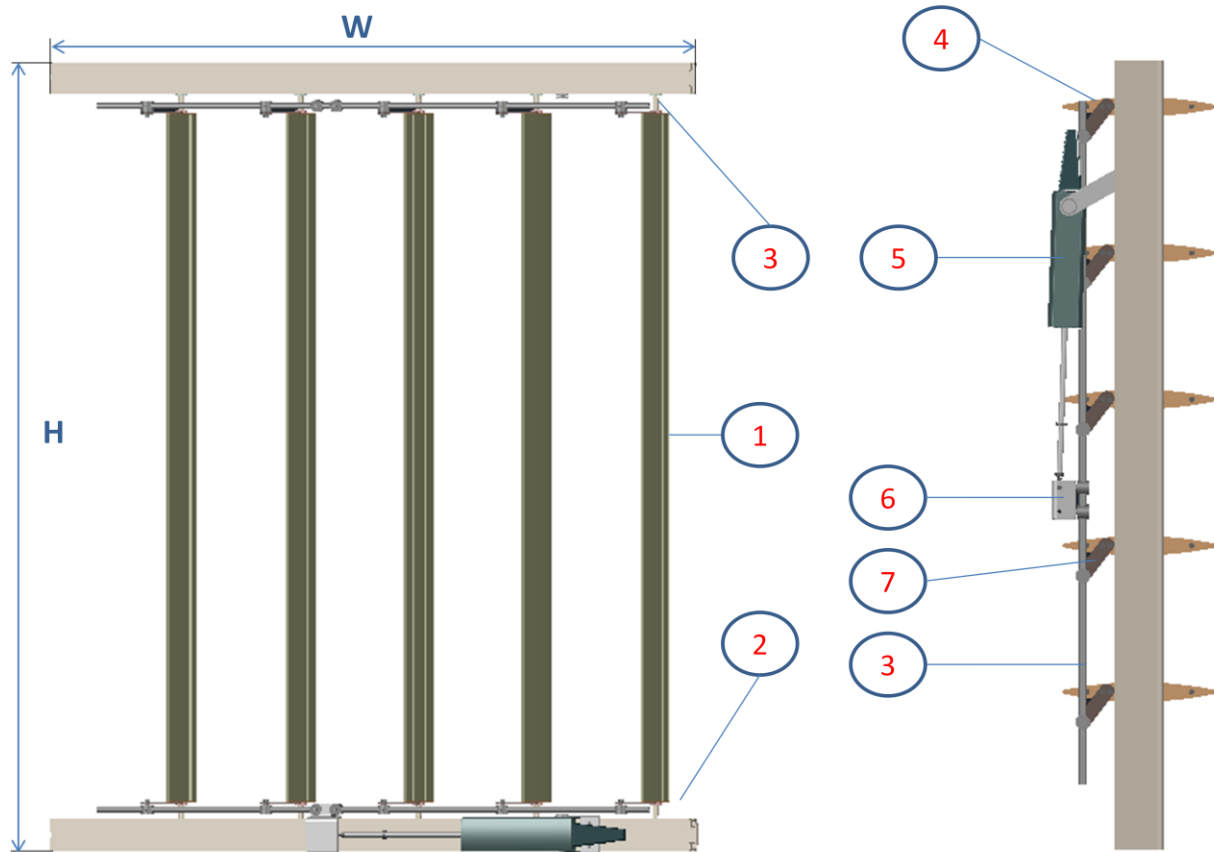


**Technical information for
rotating vertical external blinds with AL-300
profile**



Vertical blinds assembly



W=width of louver assembly

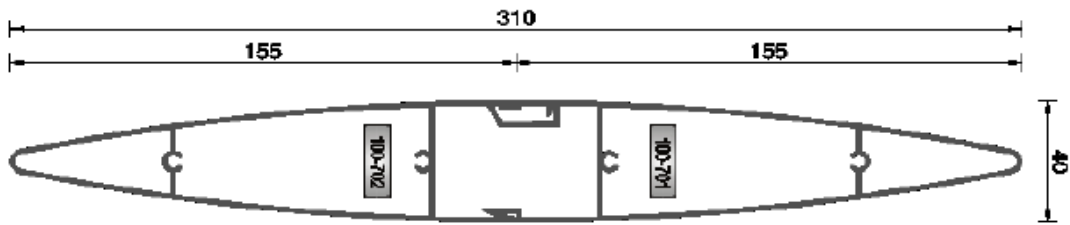
H=height of louver assembly

1. AL-300 louver
2. Mullion
3. Rod profile
4. Louver end cover plate
5. Actuator
6. Actuator bracket
7. Rod connector

assembly parts

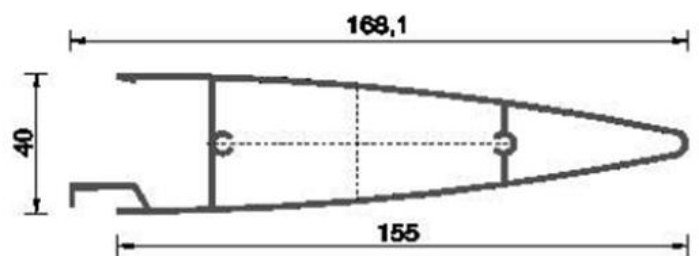
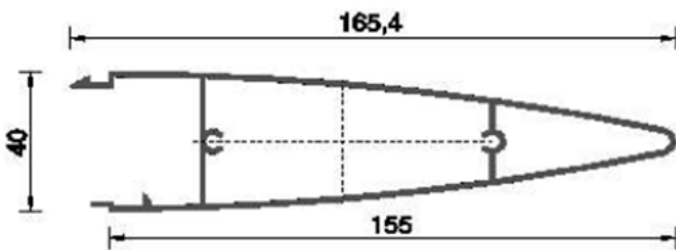
1

AL-310:310mm louver



Total weight	3184g/m
Maximum installed length	4m
Wind load resistance EN13561*	Class 3 (Beaufort 6)

*highest test class according to EN13561



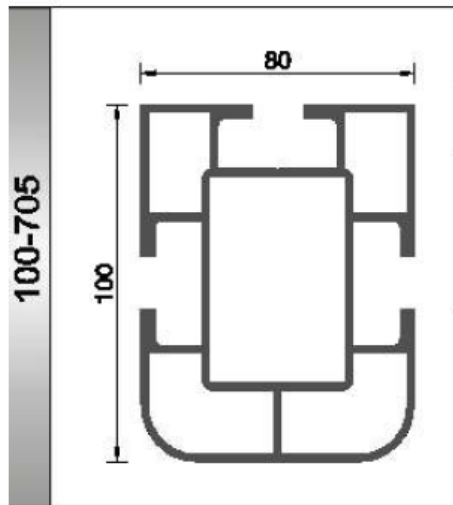
Weight	1574gr/m
Standard length	6m
Moment of inertia	$I_x=11.04\text{cm}^4$ $I_n=128.44\text{cm}^4$

Weight	1610gr/m
Standard length	6m
Moment of inertia	$I_x=10.83\text{cm}^4$ $I_y=136.26\text{cm}^4$

assembly parts

2

mullion profile



Weight	3629gr/m
Standard length	6m
Moment of inertia	$I_x=10.83\text{cm}^4$ $I_y=136.26\text{cm}^4$

3

Rod profile

TABLE OF CONTENTS

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INTRODUCTION

External solar shading systems must be included from the design process of new buildings. External solar shading systems offer comfortable living conditions with respect to room temperature and natural lighting of the interior building space as they prevent the structure's overheating and they provide anti-glare protection to the occupants.

USE OF SOLAR ENERGY

Solar shading systems affect significantly the behavior of buildings in terms of energy utilization. The purpose of these systems is to make use of solar gains and consequently to reduce heating costs during winter as well as the cooling costs during summer.

NATURAL LIGHTING

Important function of the solar shading systems is to allow the entry of natural lighting within the interior space of the building. It is well known that people feel more comfortable when they live or work under natural lighting conditions instead of artificial lighting. Thus, in the case of passive solar system installation with fixed louvers or fins, it is critical to consider the right fixed angle of tie louvers or fins in order to shade the structure's glazing during the summer period as the sun's position is high in the sky and on the other side to allow the entry of solar radiation during the winter period as the sun's position is low. In the case of active solar system installation with rotating fins that are manually or automatically controlled, the system provides greater flexibility and control allowing the building to react at external physical changes (sun's slope, cloudiness, etc.). In the event of full automatically controllable solar shading the fins of the system follow the sun's trajectory in order to optimize the amount of natural lighting entering through the building.

SELECTION OF THE APPROPRIATE SHADING SYSTEM

The criteria of selecting the appropriate solar shading system are:

- Effectiveness of solar shading
- Thermal radiation
- Wind loads
- Natural light utilization

Efficient solar shading depends upon the selection of the appropriate solar shading system and the installation of the

Appropriate glazing with high thermal insulation or shading characteristics For example, with the right combination of solar shading system and of thermal insulation glazing the amount of solar energy transmittance within the building can be reduced

The types of external solar shading systems are three:

- Fixed solar shading horizontal or vertical arrangement (Figure 1)
- Controllable rotating solar shading systems in horizontal or vertical arrangement (Figure 2)
- Solar shading systems in cantilevered arrangement (Figure 3)



Figure 1

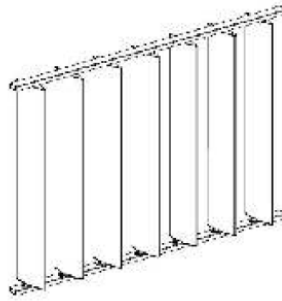


Figure 2

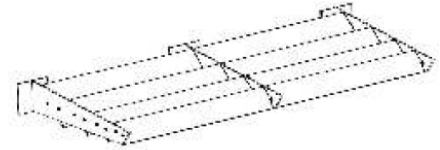


Figure 3

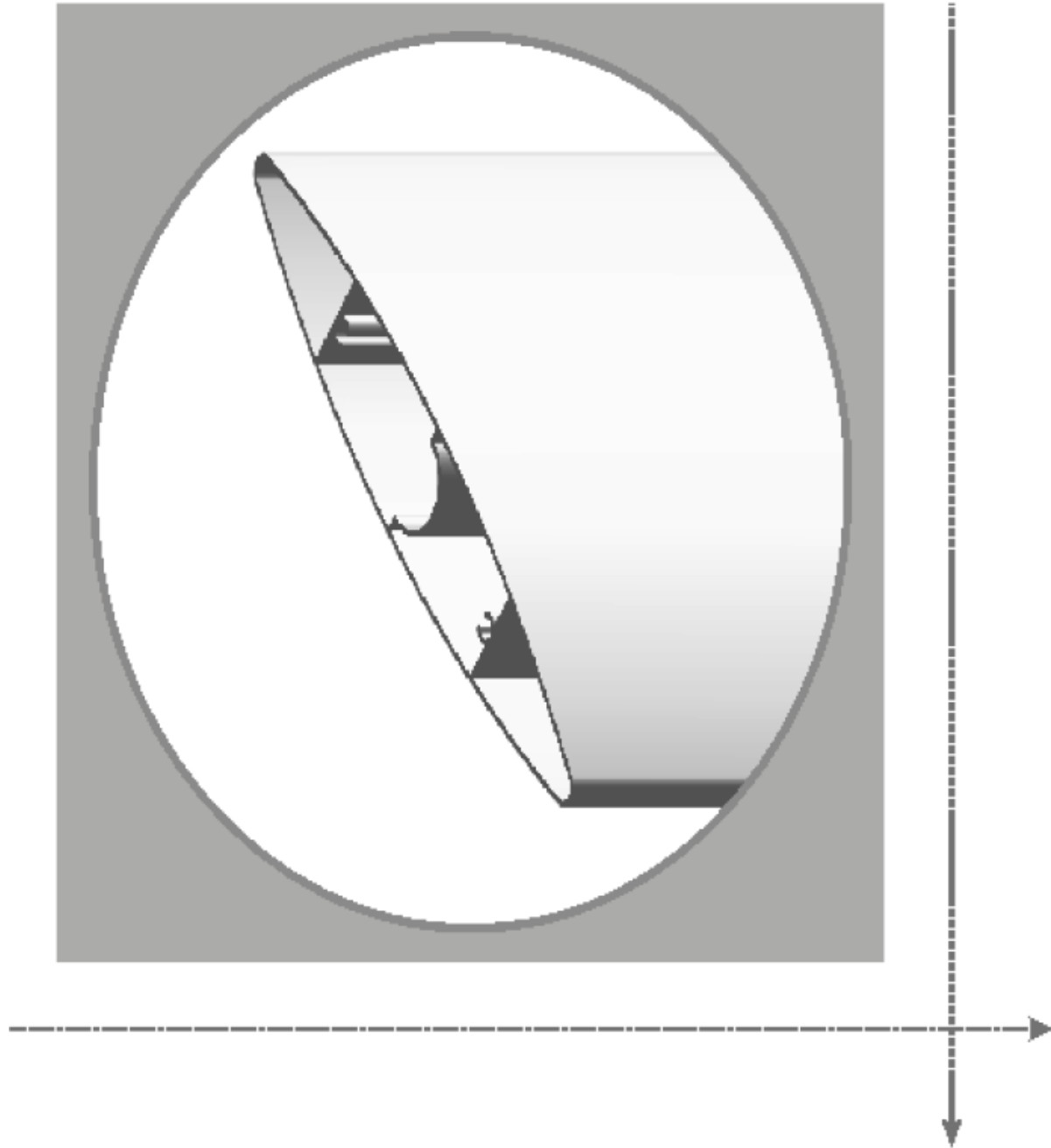
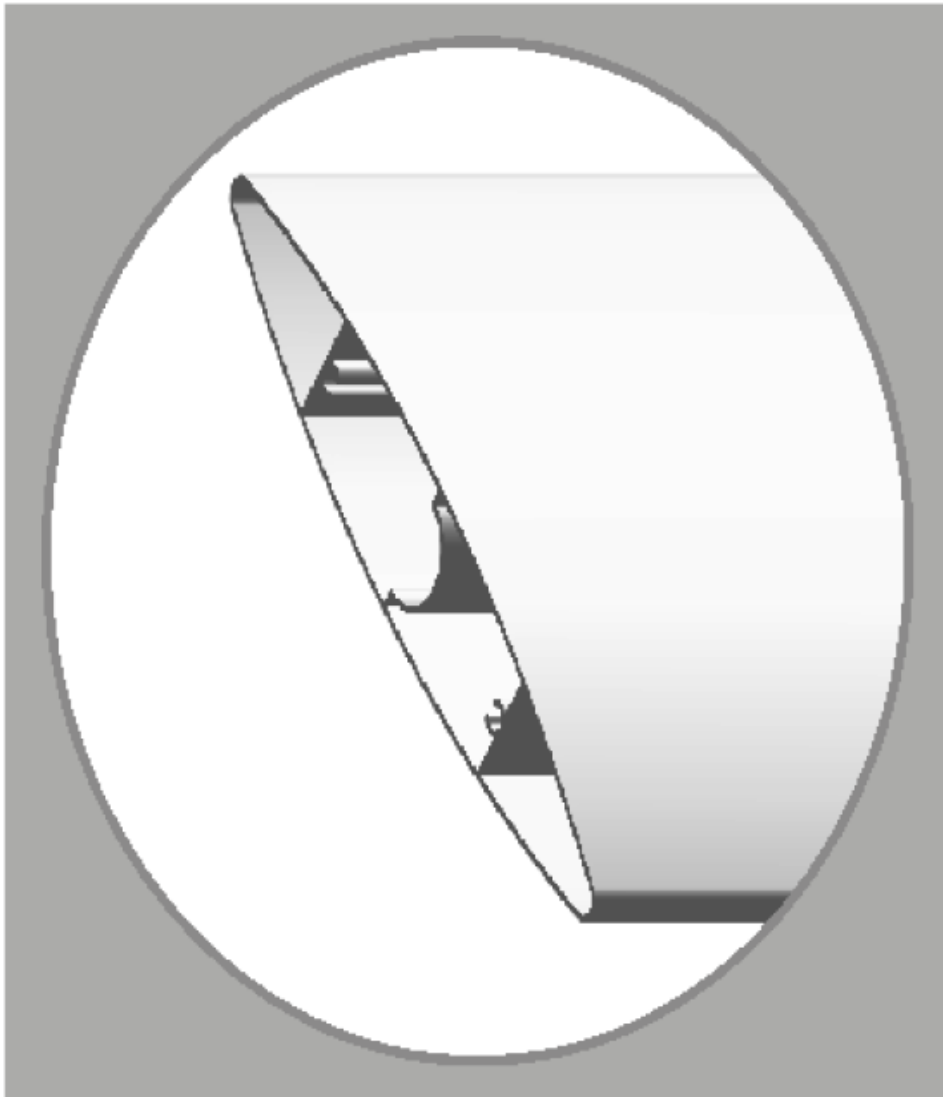
When selecting fixed solar shading systems the following parameters must be taken into account:

- The angle of the louvers or fins
- The Louvre or fin width
- The distance between the louvers or fins
- The distance from the facade
- The window or façade height
- The length of shading
- The angle of incidence of solar radiation
- In case of cantilevered shading, cantilever length

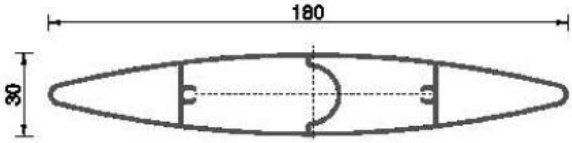
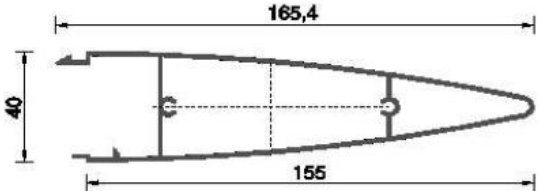
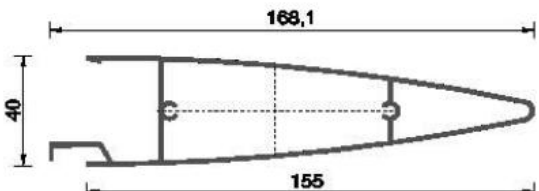
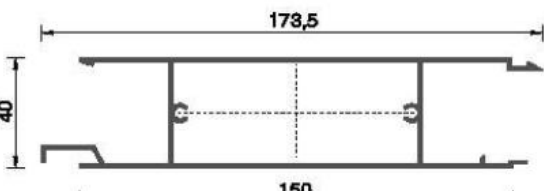
These parameters must be calculated by the architect in order to determine the appropriate solar shading systems for the potential project Furthermore the architect's aim is to determine the geographical position of the project, (latitude, longitude) as well as sun's trajectory during the day for all seasons at the particular place.



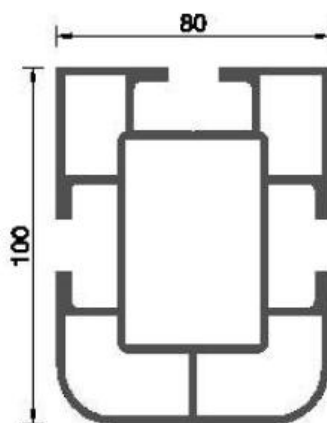
Shading system with fins




FIN PROFILES

100-704		<p>ΒΑΡΟΣ - Weight 1664 gr/m</p> <p>ΜΗΚΟΣ - Length 6 m</p> <p>ΡΟΠΗ ΑΔΡΑΝΕΙΑΣ Moment of Inertia $I_x = 6,29 \text{ cm}^4$ $I_y = 150,00 \text{ cm}^4$</p> <p>Β ΕΡΓΕΣ α να Δ ΕΜΑ Bars per bundle 2</p>
100-701		<p>ΒΑΡΟΣ - Weight 1574 gr/m</p> <p>ΜΗΚΟΣ - Length 6 m</p> <p>ΡΟΠΗ ΑΔΡΑΝΕΙΑΣ Moment of Inertia $I_x = 11,04 \text{ cm}^4$ $I_y = 128,44 \text{ cm}^4$</p> <p>Β ΕΡΓΕΣ α να Δ ΕΜΑ Bars per bundle 2</p>
100-702		<p>ΒΑΡΟΣ - Weight 1610 gr/m</p> <p>ΜΗΚΟΣ - Length 6 m</p> <p>ΡΟΠΗ ΑΔΡΑΝΕΙΑΣ Moment of Inertia $I_x = 10,93 \text{ cm}^4$ $I_y = 136,26 \text{ cm}^4$</p> <p>Β ΕΡΓΕΣ α να Δ ΕΜΑ Bars per bundle 2</p>
100-703		<p>ΒΑΡΟΣ - Weight 1731 gr/m</p> <p>ΜΗΚΟΣ - Length 6 m</p> <p>ΡΟΠΗ ΑΔΡΑΝΕΙΑΣ Moment of Inertia $I_x = 18,86 \text{ cm}^4$ $I_y = 154,26 \text{ cm}^4$</p> <p>Β ΕΡΓΕΣ α να Δ ΕΜΑ Bars per bundle 2</p>

Mullion profile

100-705		ΒΑΡΟΣ - Weight 3629 gr/m
		ΜΗΚΟΣ - Length 6 m
		ΡΟΠΗ ΔΡΑΜΕΙΑΣ Moment of Inertia $I_x = 100,8 \text{ cm}^4$ $I_y = 144,2 \text{ cm}^4$
		ΒΕΡΤΕΣ ανά ΔΕΜΑ Bars per bundle 2

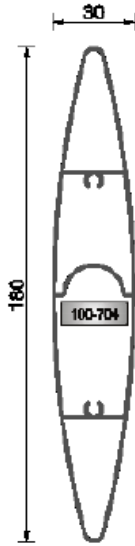
Rod profile

Φ 15 x 2.00mm		ΒΑΡΟΣ - Weight 220 gr/m
		ΜΗΚΟΣ - Length 6 m
		ΡΟΠΗ ΔΡΑΜΕΙΑΣ Moment of Inertia $I_x = 0,18 \text{ cm}^4$ $I_y = 0,18 \text{ cm}^4$
		ΒΕΡΤΕΣ ανά ΔΕΜΑ Bars per bundle 20

180mm louver

ΒΑΡΟΣ / Weight

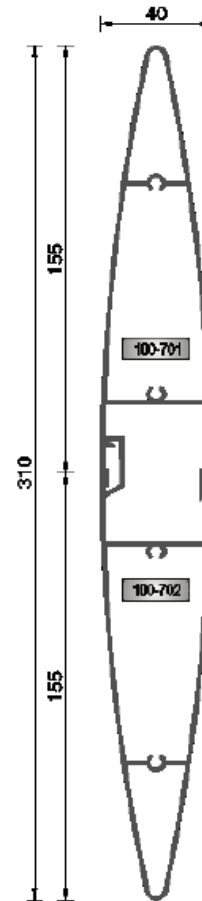
1664 gr/m



310mm louver

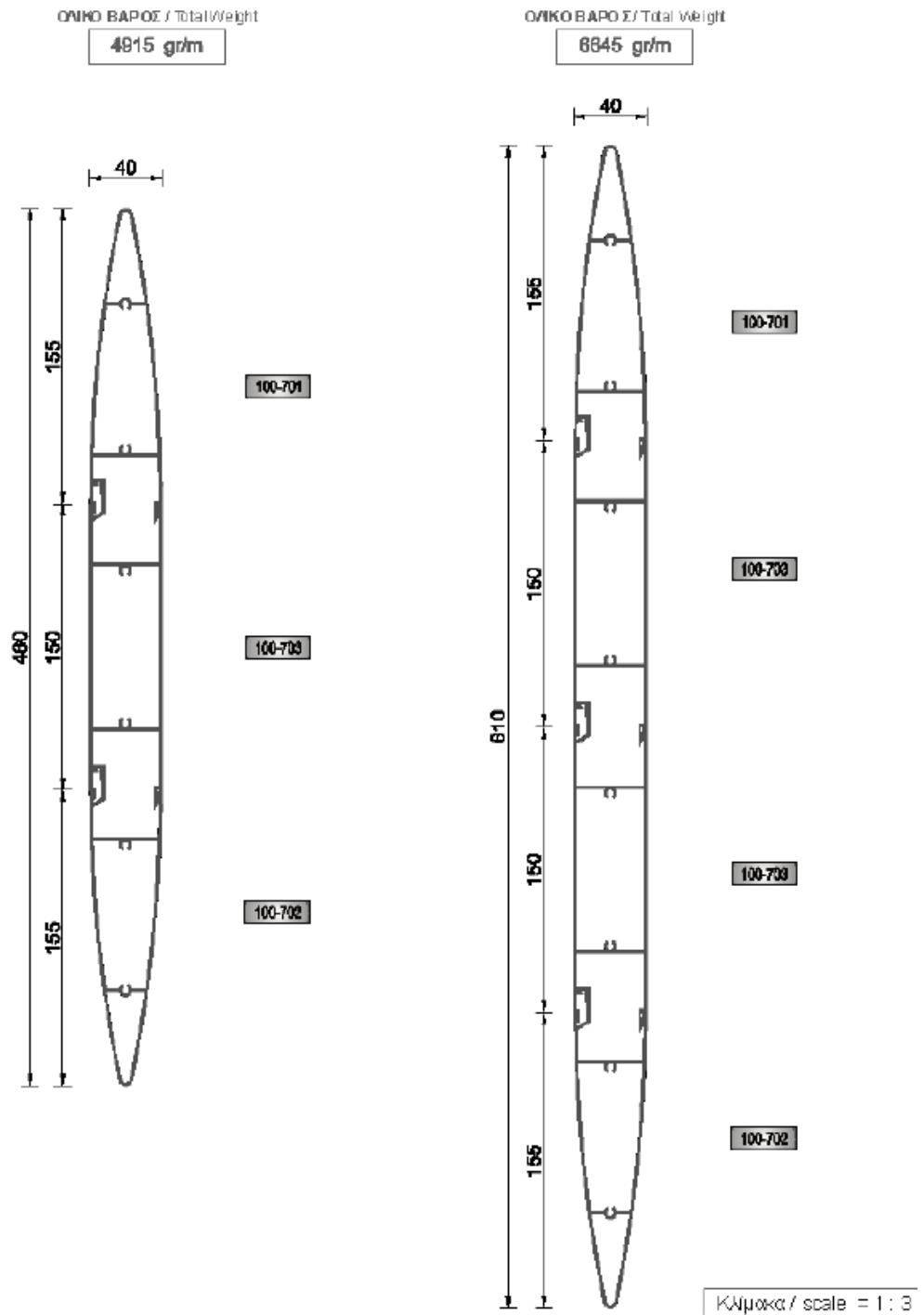
ΟΛΙΚΟ ΒΑΡΟΣ / Total Weight

3184 gr/m



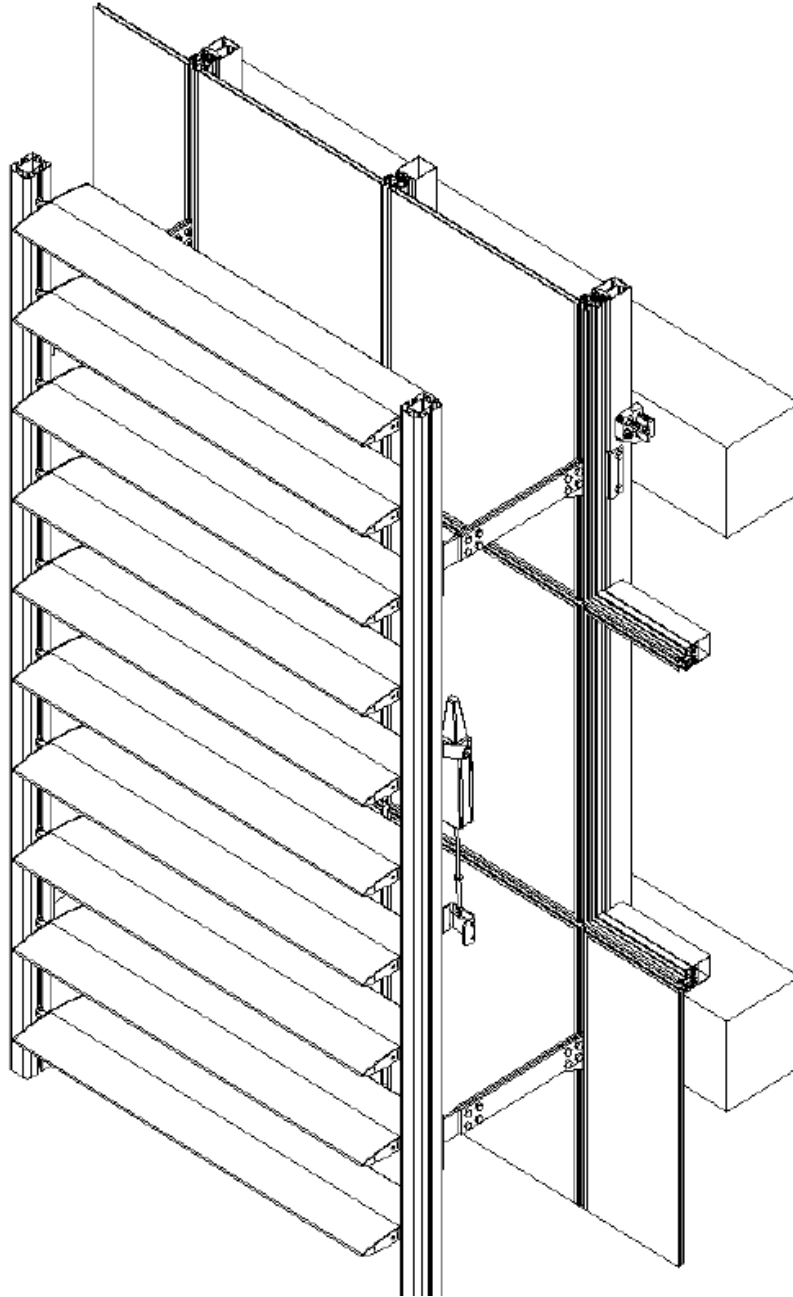
460mm louver

610mm louver



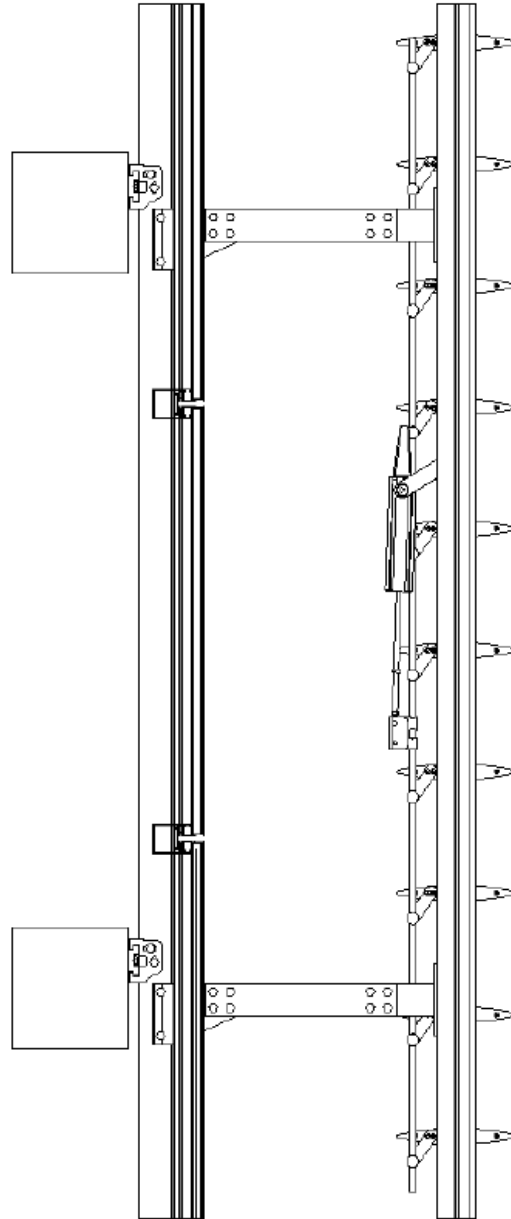
CURTAIN WALL WITH SHADING SYSTEM

ROTATING FIN SHADING SYSTEM ON CURTAIN WALL (TYPE 1)

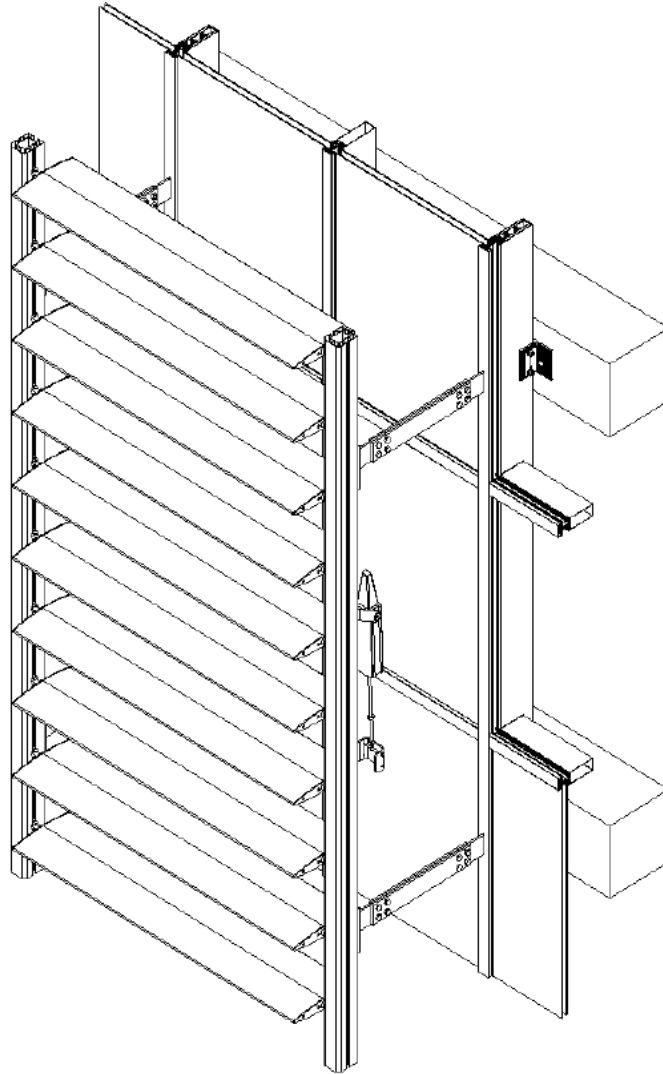


CURTAIN WALL WITH SHADING SYSTEM

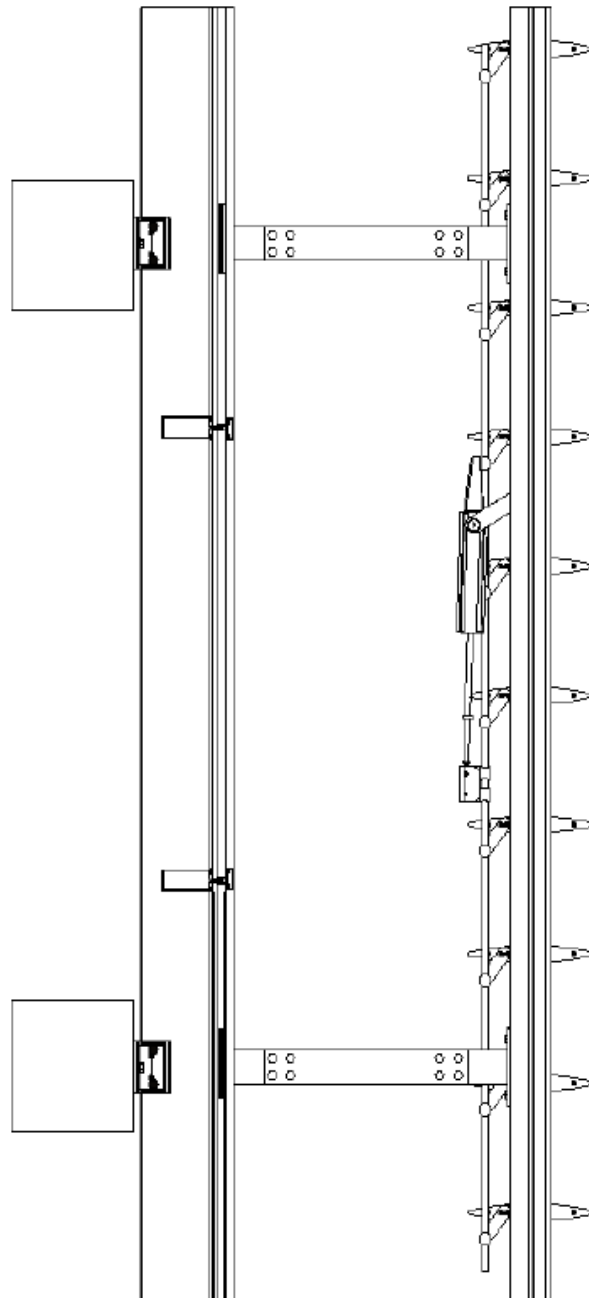
ROTATING FIN SHADING SYSTEM ON CURTAIN WALL (TYPE 1)



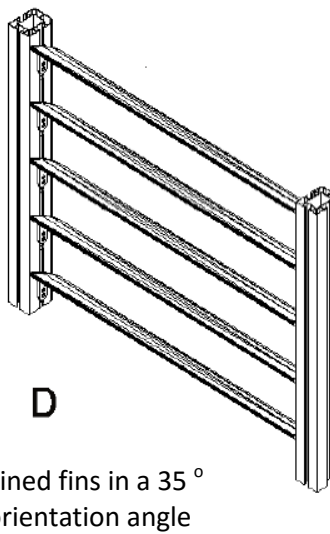
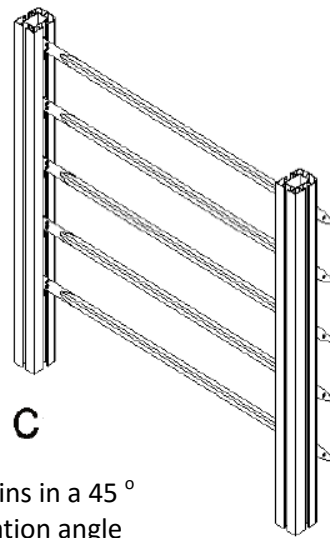
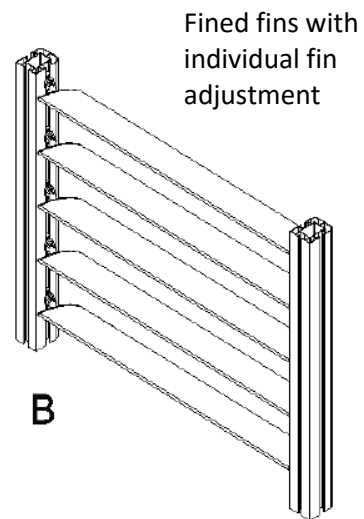
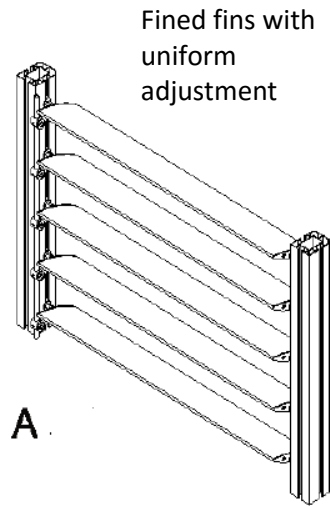
CURTAIN WALL WITH SHADING SYSTEM
ROTATING FIN SHADING SYSTEM ON CURTAIN WALL (TYPE 2)



CURTAIN WALL WITH SHADING SYSTEM
ROTATING FIN SHADING SYSTEM ON CURTAIN WALL (TYPE 2)

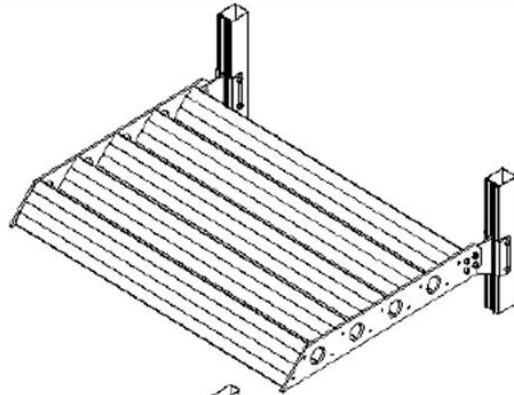


FIXED FINS

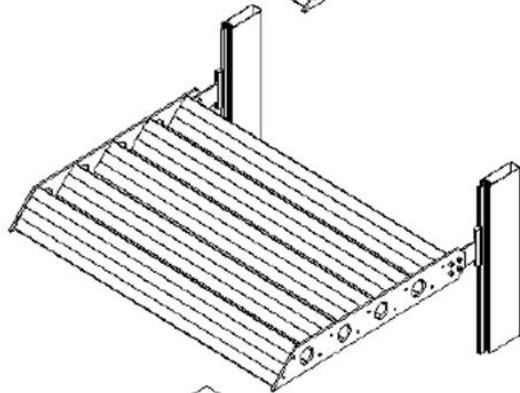


CANTILEVERED SHADING

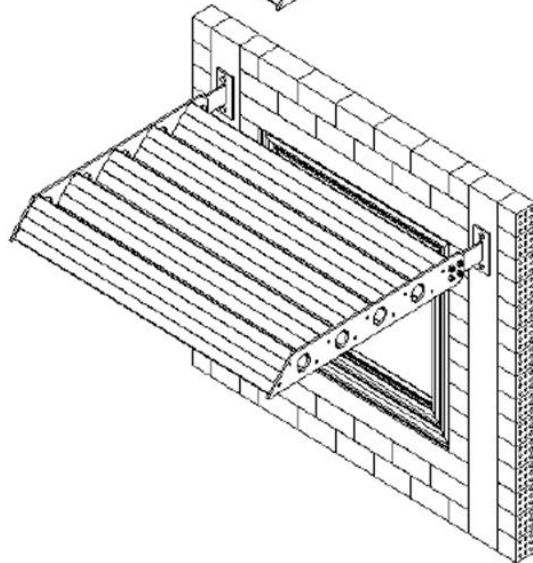
Fins attached on a mullion (type 1)



Fins attached on a mullion (type 2)

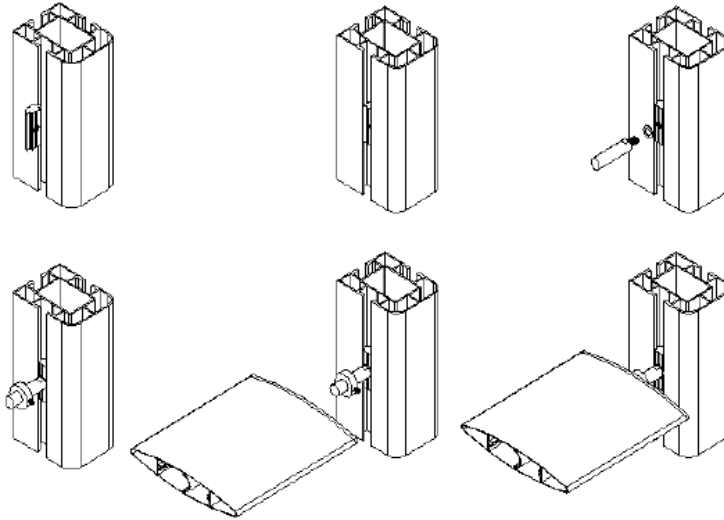


Fins attached on a concrete wall

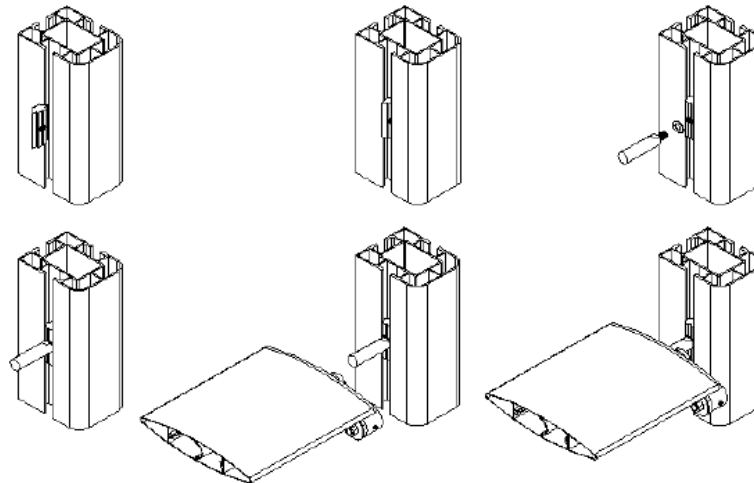


ROTATING FIN ASSEMBLY DETAILS

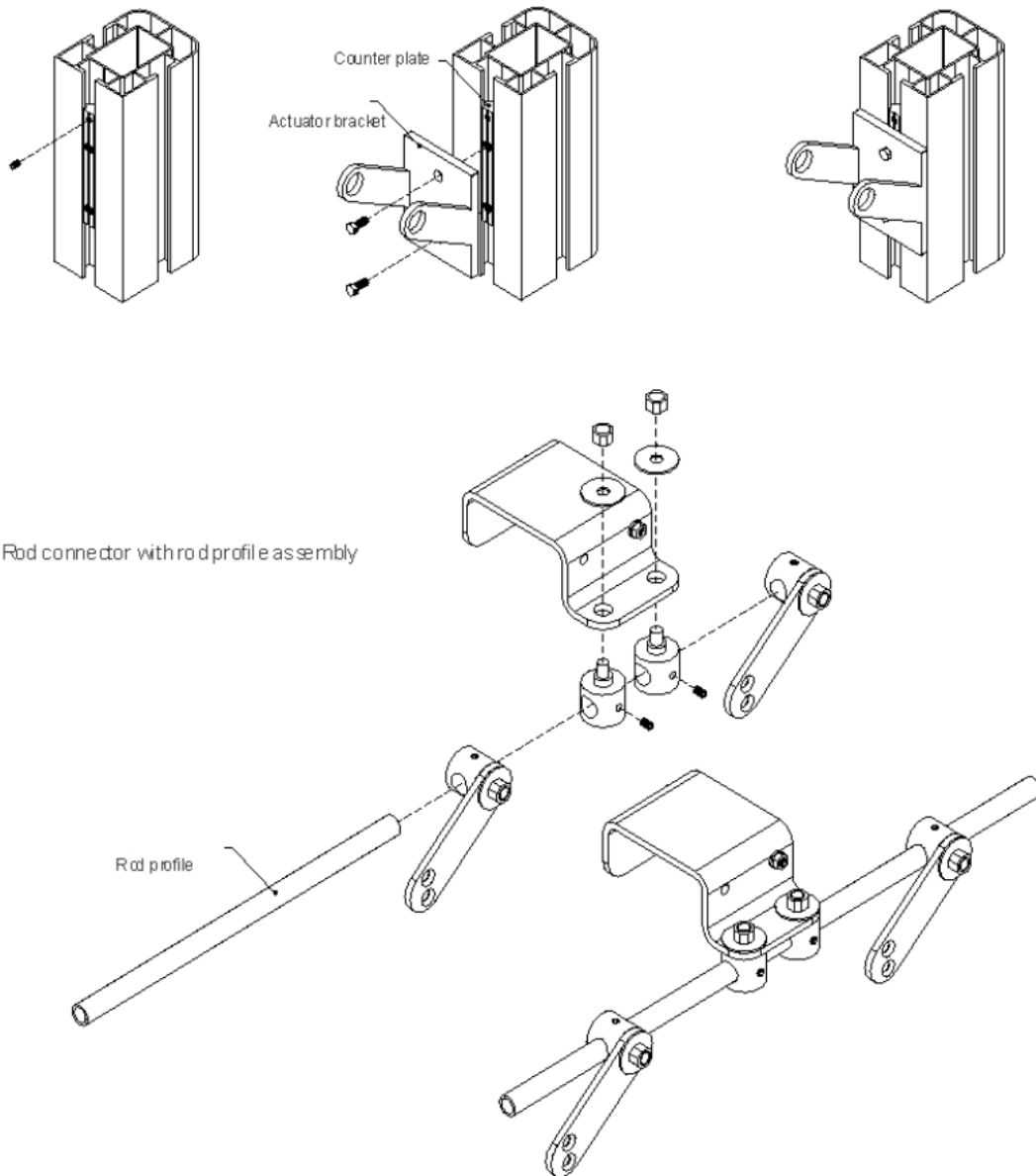
Non motor side



Side with motor

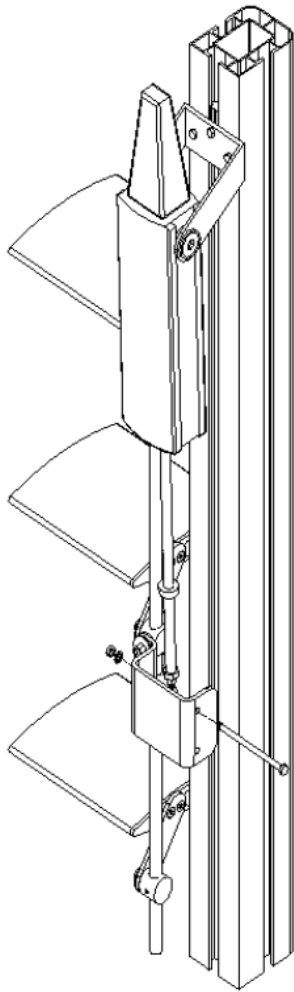


ROTATING FIN ASSEMBLY DETAILS (cont'd)

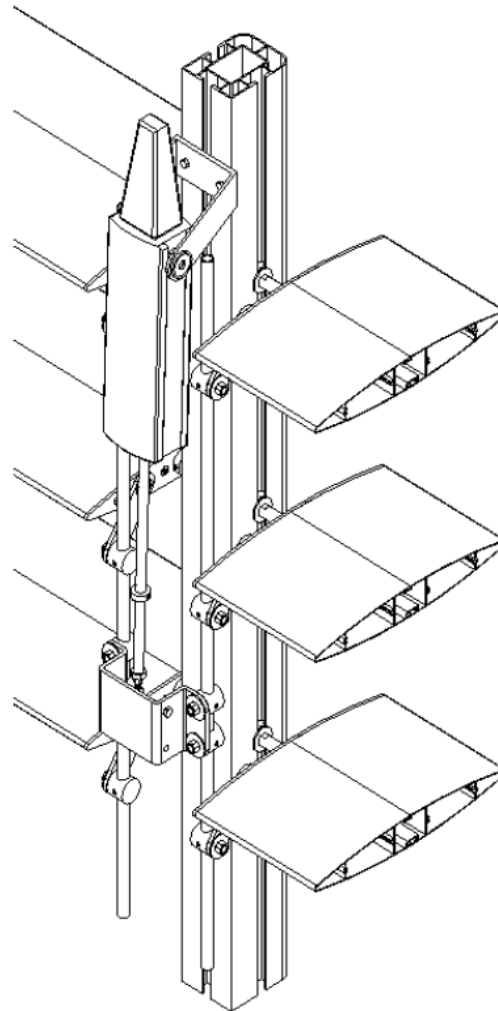


ROTATING FIN ASSEMBLY DETAILS (cont'd)

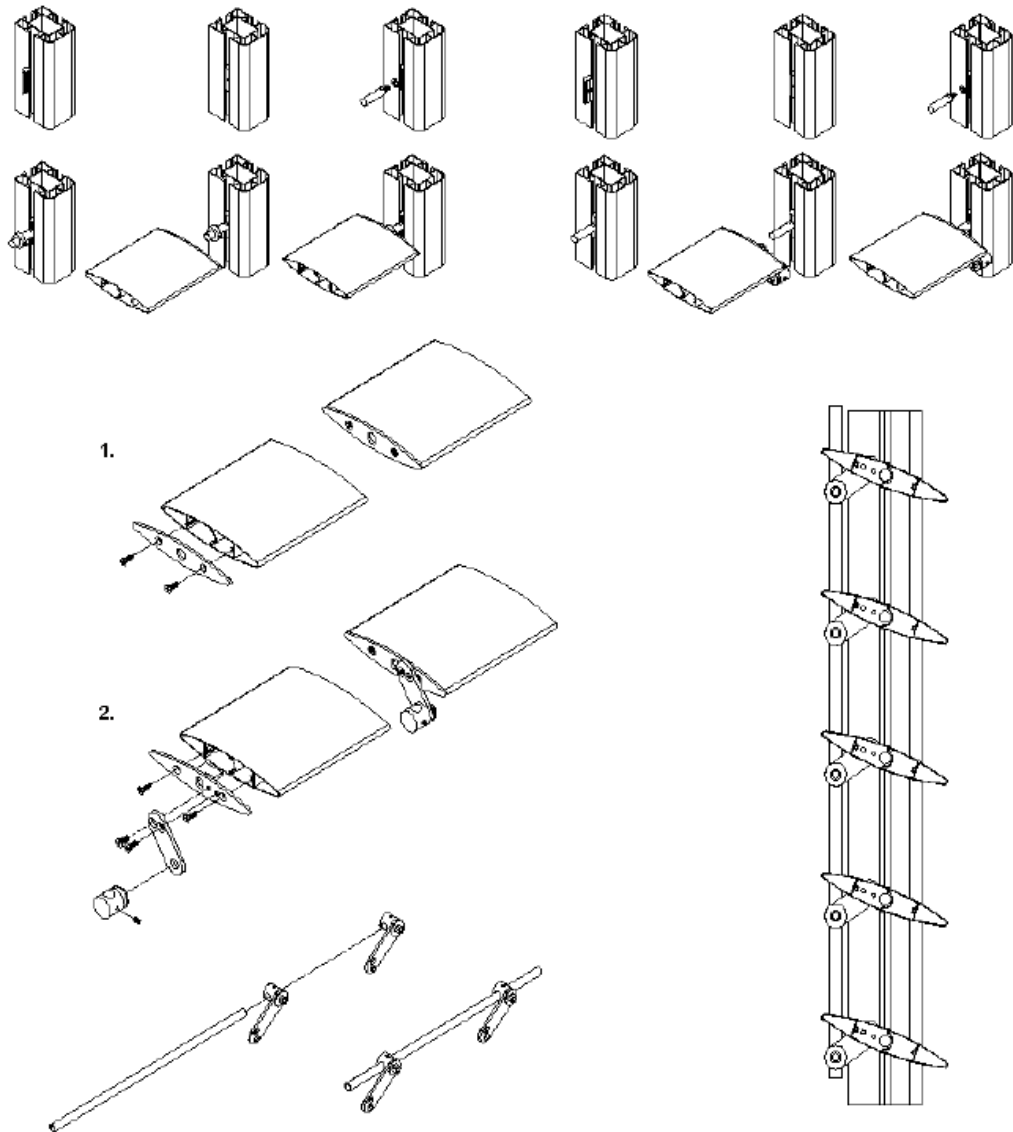
Shading System with single rod connector



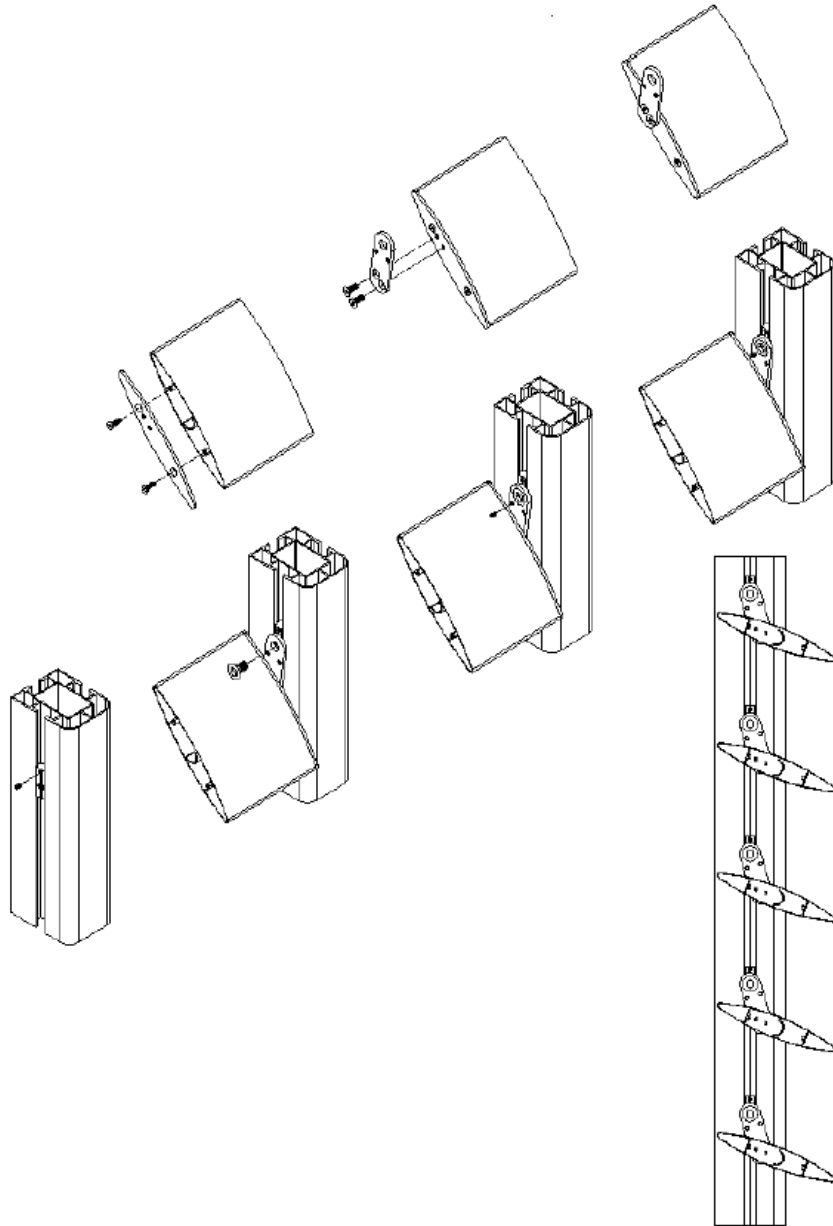
Shading System with dual rod connector



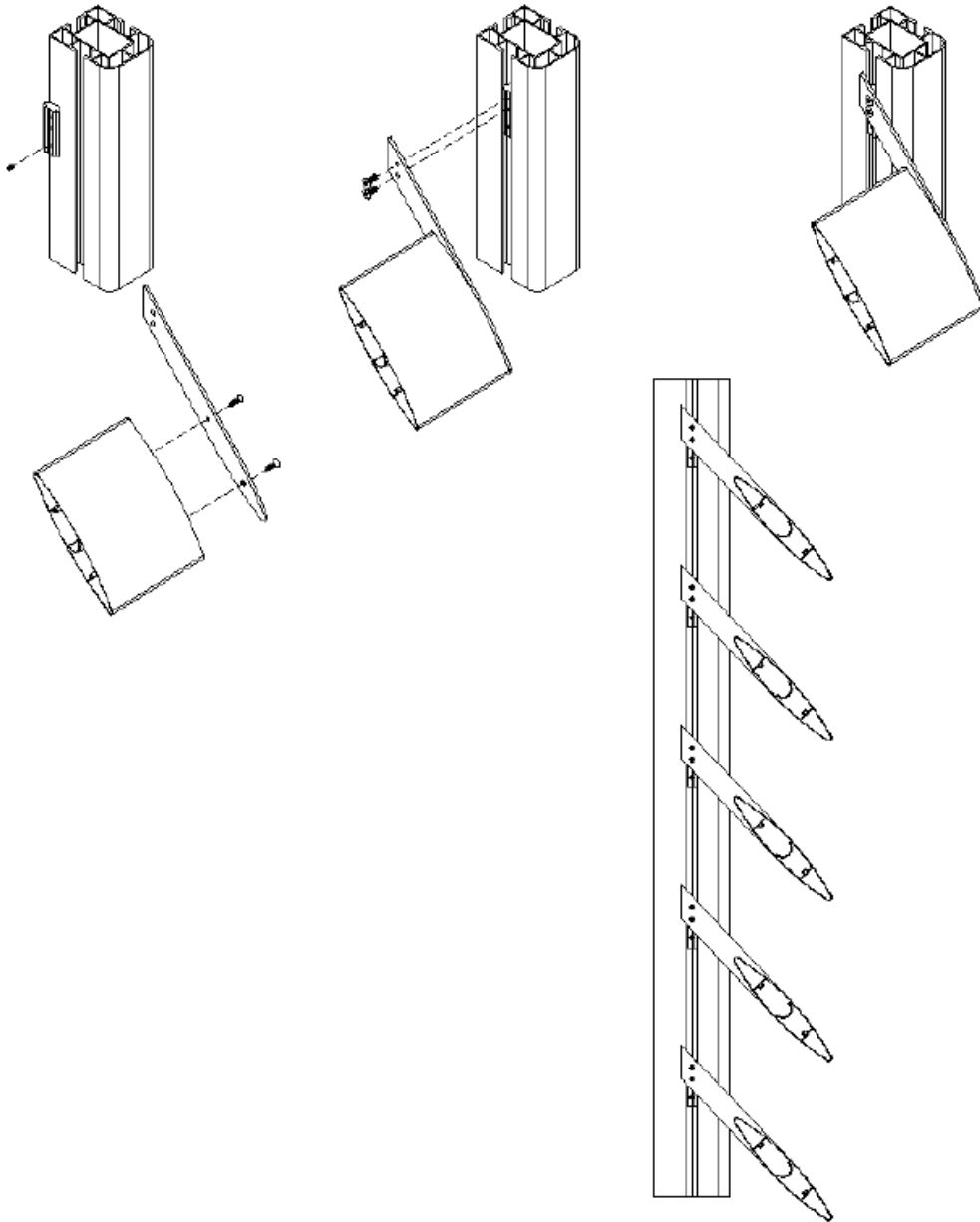
Fixed fin assembly, TYPE A



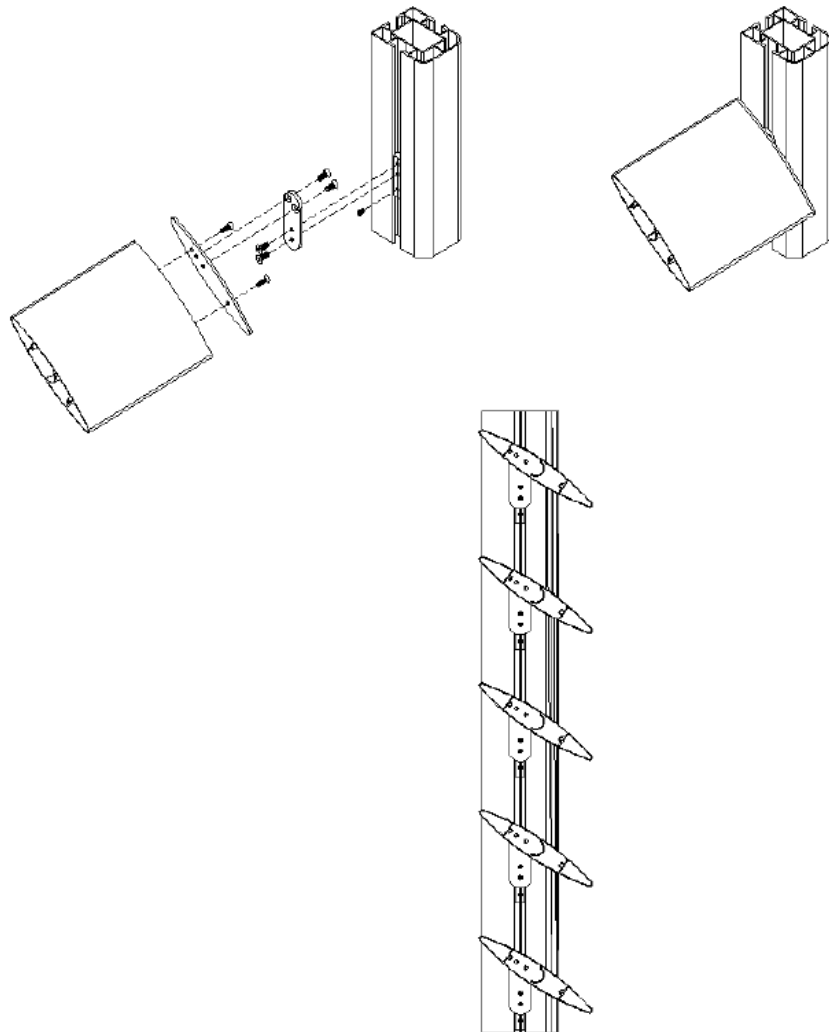
Fixed fin assembly, TYPE B



Fixed fin assembly, TYPE C

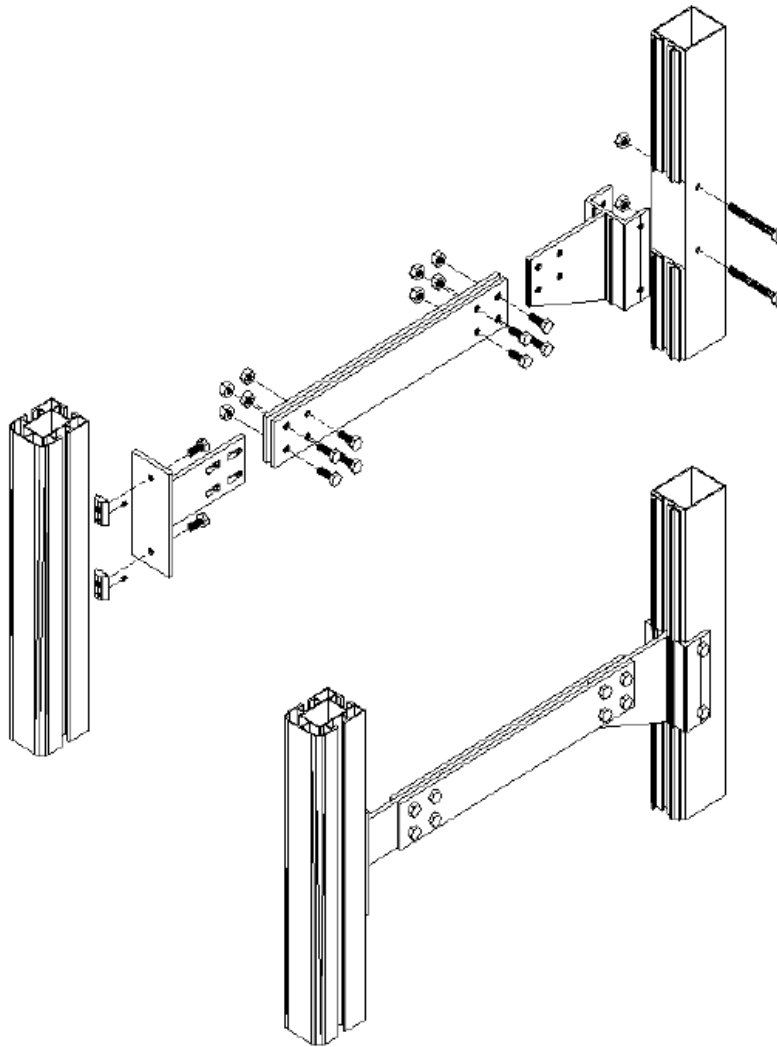


Fixed fin assembly, TYPE D

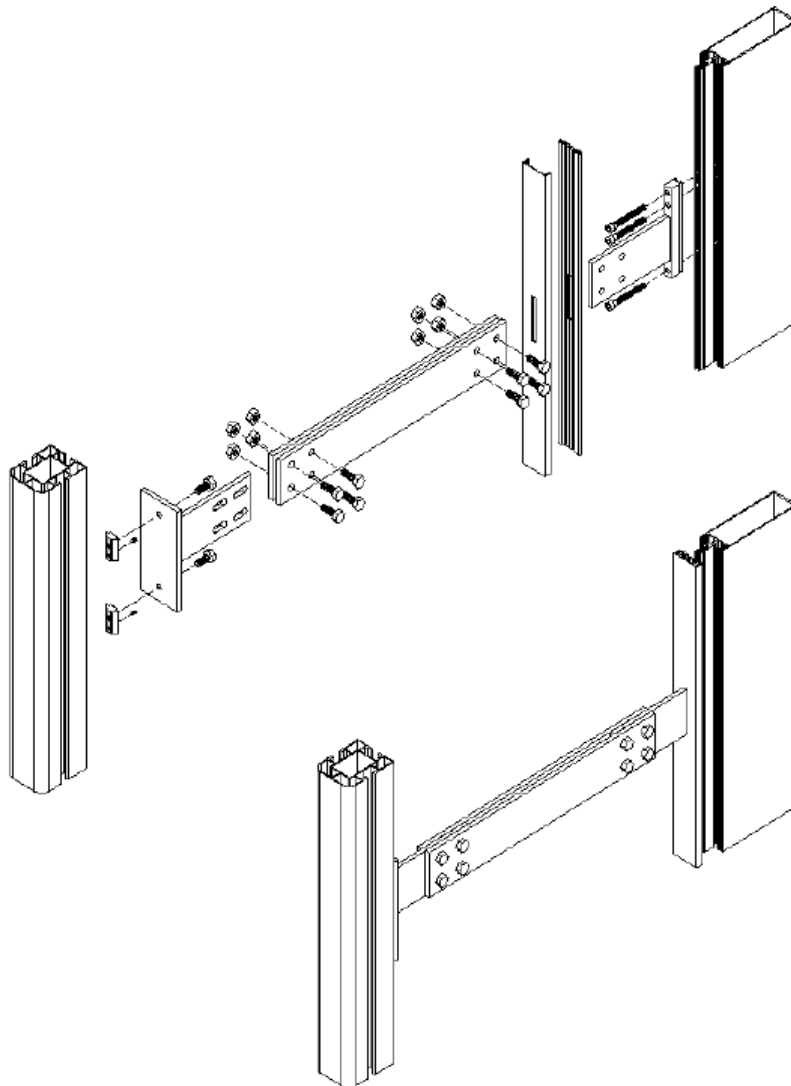


Curtain wall and shading fins assembly details

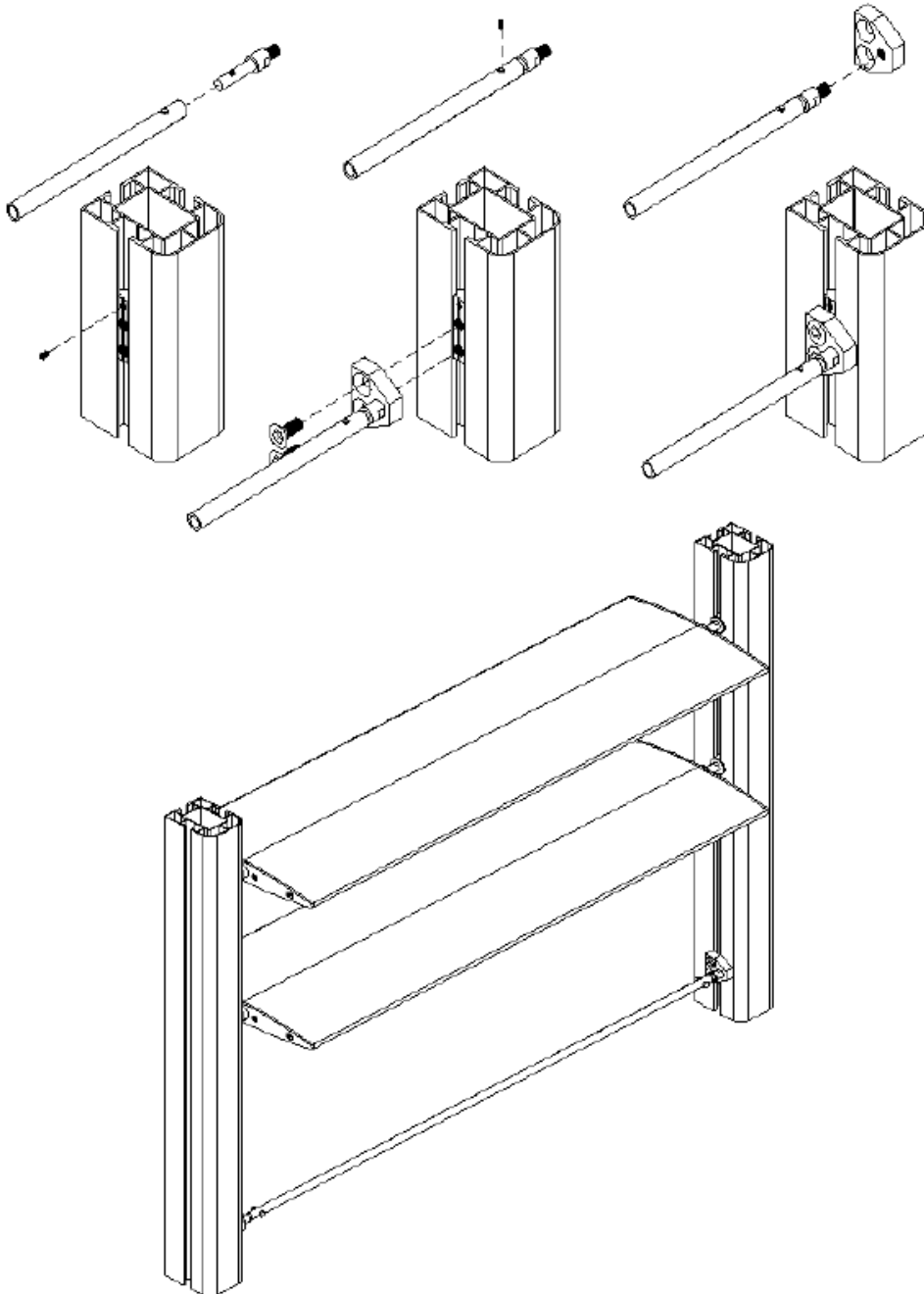
Support assembly connecting mullion profile 100-705 and curtain wall mullion (type A)



Support assembly connecting mullion profile 100-705 and curtain wall mullion (type B)



Assembly details of mullion profile 100-705



Cutting dimensions

The maximum cutting length of the fins depends on the profile geometric characteristics as well as the project requirements: In general,

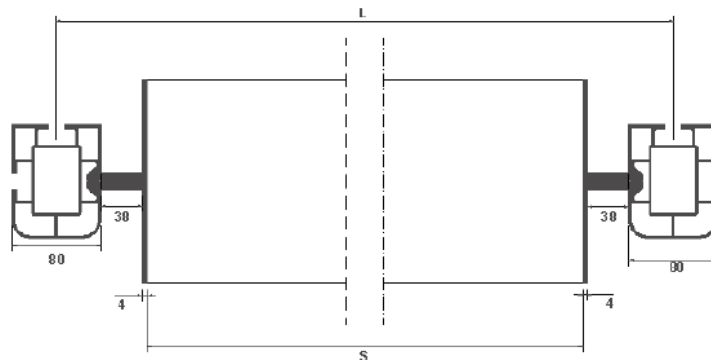
Fin size	Maximum length
180mm	3m
310mm	4m
480mm	4m
610mm	4m

For example, for a project with opening of 26m, where the 180mm fin will be used, there are $26/3=8.67$ openings, or 9, (rounded up). Then every opening will have length $L=26/9$, or $L=2890\text{mm}$

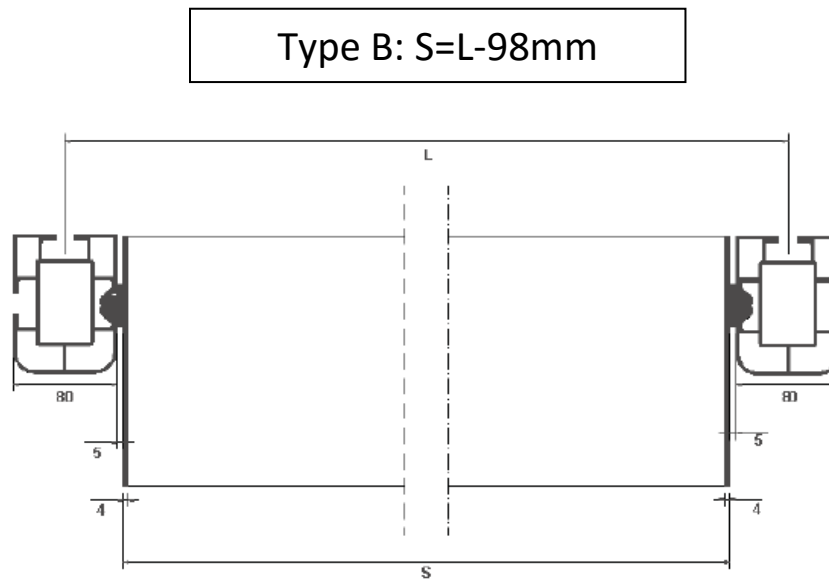
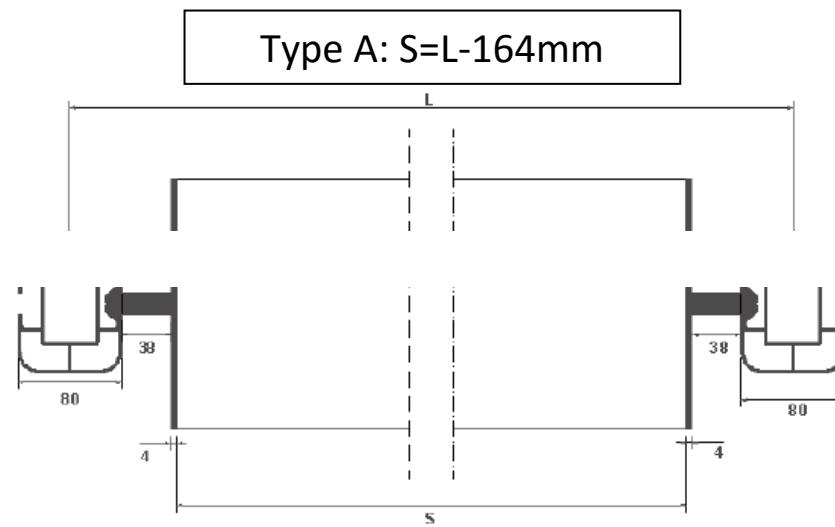
The cutting length of a rotating fin is calculated as follow, where L is the the length of the opening along the axis of the fin

$$S = L - 164\text{mm}$$

Or the above example, the length of the fin will be, $S = 2890 - 164\text{mm}$

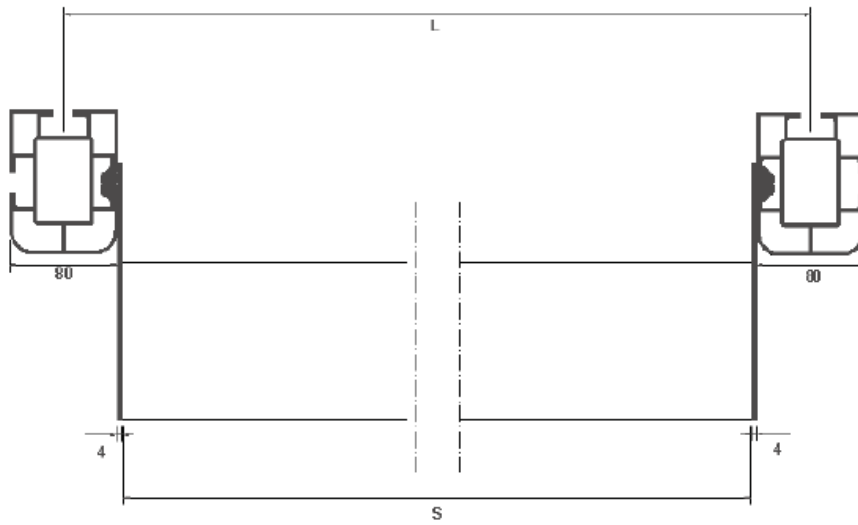


Calculation of length of fixed fins: L is the length of the fin along its axis

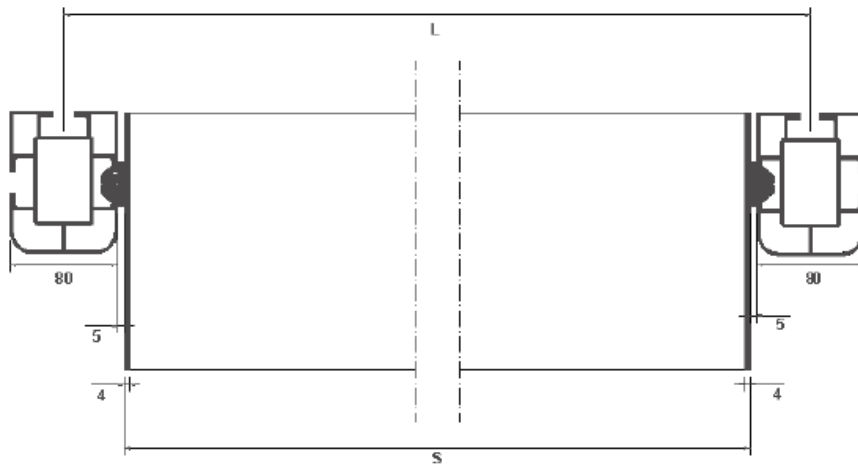


Calculation of length of fixed fins: L is the length of the fin along its axis

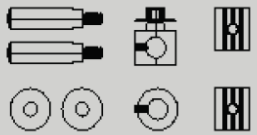
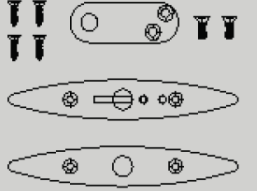
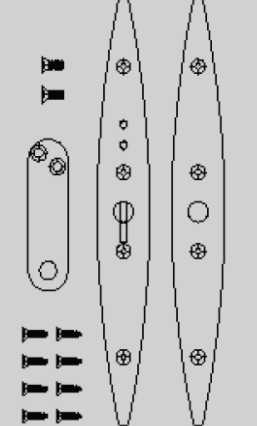
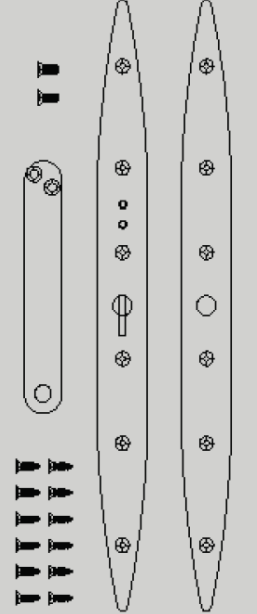
Type C: $S=L-88\text{mm}$



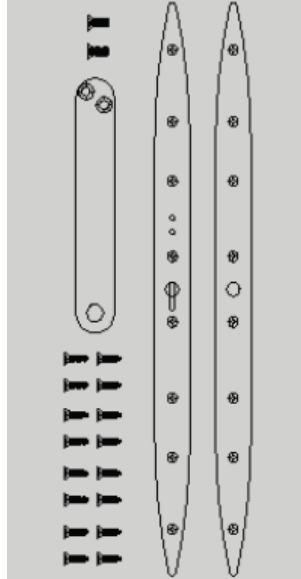
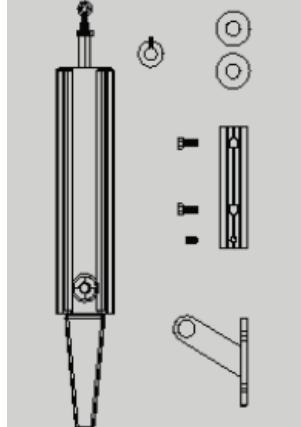
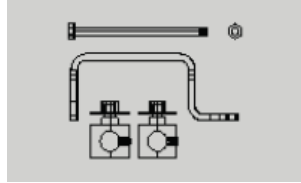
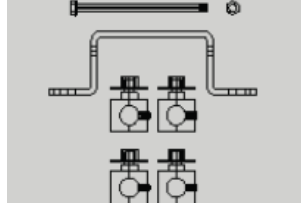
Type D: $S=L-98\text{mm}$

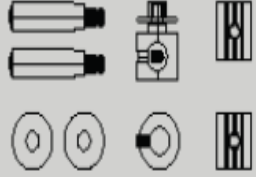
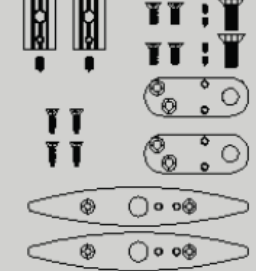
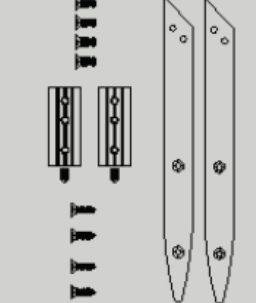
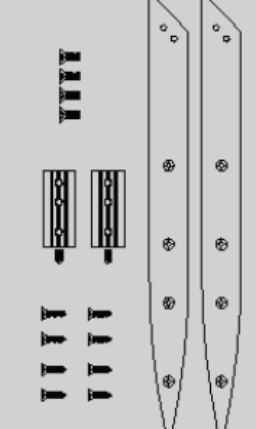


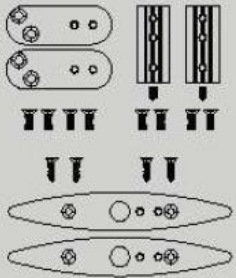
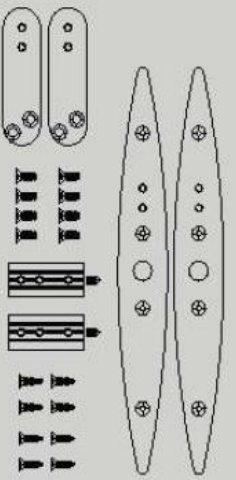
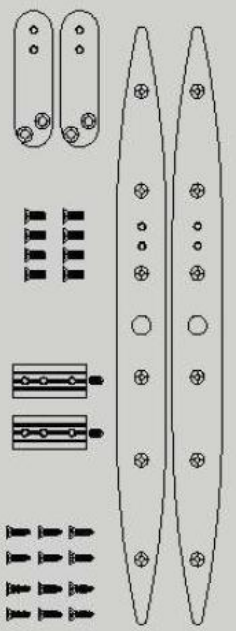
Rotating Fins

Code	Description	Figure
3436	Rotation accessories set common for all fins (for mullion profile 100-705)	
3439	Accessories set for rotating fins AL-180	
3440	Accessories set for rotating fins AL-310	
3441	Accessories set for rotating fins AL-480	

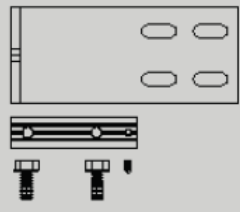
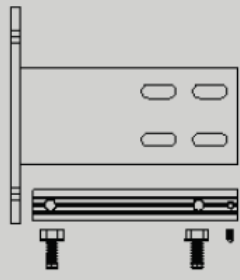
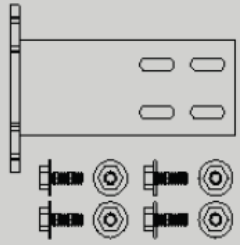
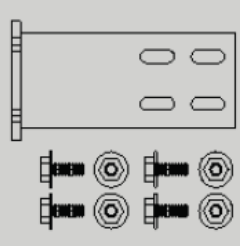
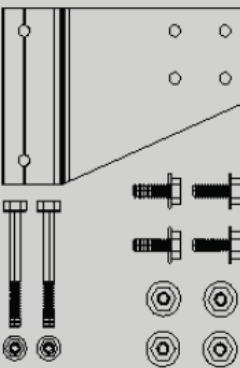
Rotating Fins

Code	Description	Figure
3442	Accessories set for rotating fins AL-610	
3668	Electric actuator set 80mm (for mullion profile 100-705) for 15-20m ²	
3670	Actuator rod connector (single set)	
3671	Actuator rod connector (double set)	

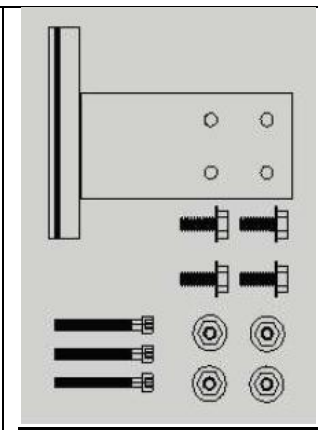
Code	Description	Figure
Fixed Fins TYPE A		
3456	Fixed fins accessories set based on rotating fins system, common for all fins (for mullion profile 100-705)	
Fixed Fins TYPE B		
3437	Fixed fins accessories set for adjustable angle, only for fin profile AL-180	
Fixed Fins TYPE C		
3449	Fixed fins accessories set with end cap plates for 45° angle for fin profile AL-180	
3450	Fixed fins accessories set with end cap plates for 45° angle for fin profile AL-310	

Fixed Fins TYPE D		
3446	Fixed fins accessories set with end cap plates for 35° angle for fin profile AL-180 (for mullion profile 100-705)	
3447	Fixed fins accessories set with end cap plates for 35° angle for fin profile AL-310 (for mullion profile 100-705)	
3448	Fixed fins accessories set with end cap plates for 35° angle for fin profile AL-460 (for mullion profile 100-705)	

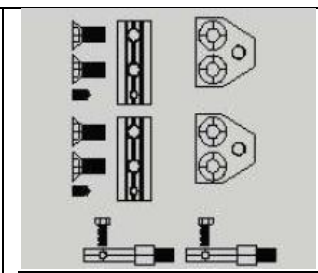
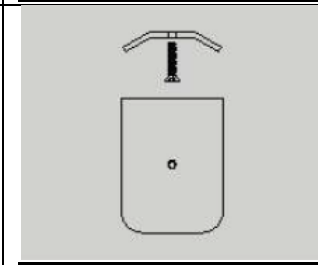
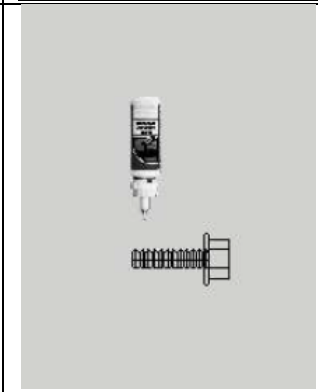
Attachment Sets

3454	Horizontal mullion lateral attachment set for profile 100-705	
3455	Vertical mullion lateral attachment set for profile 100-705	
3451	Lateral wall attachment set for horizontal mullion profile 100-705	
3452	Lateral wall attachment set for vertical mullion profile 100-705	
3438	Attachment set for curtain wall system (Type 1)	

Attachment sets

3453	Attachment set for curtain wall system (Type 2)	 <p>The image shows the components of the attachment set for curtain wall system (Type 2). It includes a long vertical profile, a rectangular plate with four circular holes, two sets of screws with washers, and three long screws with washers.</p>
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Miscellaneous accessories

3443	Stabilizer accessory set for mullion 100-705	 <p>The image shows the components of the stabilizer accessory set for mullion 100-705. It includes two sets of stabilizer brackets, two sets of screws with washers, and two sets of screws with washers.</p>
3444	Mullion end cap for profile 100-705	 <p>The image shows the mullion end cap for profile 100-705. It is a rectangular cap with a curved top edge and a small circular hole in the center.</p>
3451	Screw security glue	 <p>The image shows the screw security glue component. It is a small tube of glue with a nozzle, and a screw with a washer.</p>