All *kudos* opening roofs :
Checking desired louvre span is possible / calculating correct beam spec.

STEP 1 :
ESTABLISH YOUR WIND ZONE & MAXIMUM LOUVRE SPAN

Find out from your Local Council the designated wind-zone for the site of your roof project.

Either : Very high
High
Medium
Low

To check the maximum distance your Delta or Titan blade can safely span in your designated wind zone, use the *kudos* louvre span table on Technical info. page 3.

WIND ZONE	LOW	MEDIUM	HIGH	VERY HIGH
DELTA ROOF BLADE	4.4m	4.2m	4.0m	3.6m
TITAN ROOF BLADE	3.9m	3.7m	3.6m	3.4m

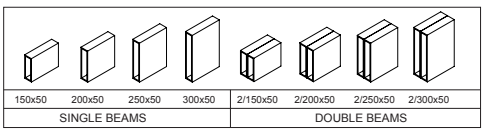
MAX. LOUVRE SPANS

kudos LOUVRE SPAN TABLE ; see Technical info. page 3

1. Choose blade type : **TITAN**
2. Find out your wind zone : **HIGH**
3. Check your desired roof louvre span doesn't exceed the maximum safe spanning distance : **3.6m or less**

STEP 2 :
CALCULATE BEAM TYPE & SIZE REQUIRED TO SUPPORT YOUR ROOF

Once you have confirmed that your desired louvre span is ok for your wind zone, calculate the correct beam type & size for the perimeter frame which will support your roof.



BEAM SIZES / COMBINATIONS

Example A : *(see below left)*

Calculate beam type reqd. for a TITAN roof in a High Wind Zone, louvre span 1.9m & roof length of 3.5m.

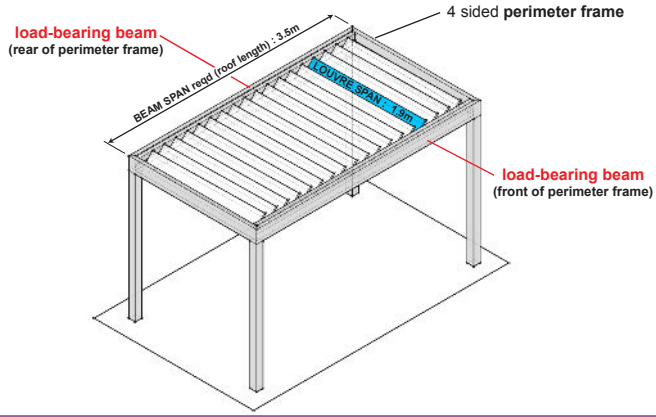
WIND ZONE	SINGLE BEAM TYPE	LENGTH OF LOUVRE SINGLE BEAM IS SUPPORTING							
		1.2m	1.6m	2.0m	2.4m	2.8m	3.2m	3.6m	4.0m
LOW	150 x 50m	4.6m	4.4m	3.8m	3.6m	3.4m	3.2m	3.2m	3.0m
	200 x 50mm	5.8m	5.4m	5.0m	4.6m	4.4m	4.2m	4.0m	3.8m
	250 x 50mm	7.2m	6.6m	6.0m	5.8m	5.4m	5.2m	5.0m	4.8m
	300 x 50mm	8.2m	7.6m	7.2m	6.6m	6.4m	6.0m	5.8m	5.6m
MEDIUM	150 x 50m	4.2m	3.8m	3.4m	3.2m	3.2m	3.0m	2.8m	2.8m
	200 x 50mm	5.4m	4.8m	4.6m	4.2m	4.0m	3.8m	3.6m	3.6m
	250 x 50mm	6.6m	6.0m	5.6m	5.2m	5.0m	4.6m	4.6m	4.4m
	300 x 50mm	7.6m	7.0m	6.6m	6.4m	5.8m	5.6m	5.4m	5.2m
HIGH	150 x 50m	3.8m	3.4m	3.2m	3.0m	2.8m	2.6m	2.6m	2.4m
	200 x 50mm	5.4m	4.8m	4.6m	4.2m	4.0m	3.8m	3.6m	3.4m
	250 x 50mm	5.8m	5.4m	5.0m	4.8m	4.4m	4.2m	4.0m	3.8m
	300 x 50mm	6.8m	6.2m	5.8m	5.4m	5.2m	5.0m	4.8m	4.4m
VERY HIGH	150 x 50m	3.4m	3.2m	2.8m	2.8m	2.6m	2.4m	2.4m	2.2m
	200 x 50mm	4.4m	4.0m	3.8m	3.4m	3.4m	3.2m	3.0m	3.0m
	250 x 50mm	5.4m	4.8m	4.6m	4.2m	4.0m	3.8m	3.8m	3.6m
	300 x 50mm	6.2m	5.8m	5.4m	5.0m	4.8m	4.6m	4.4m	4.2m

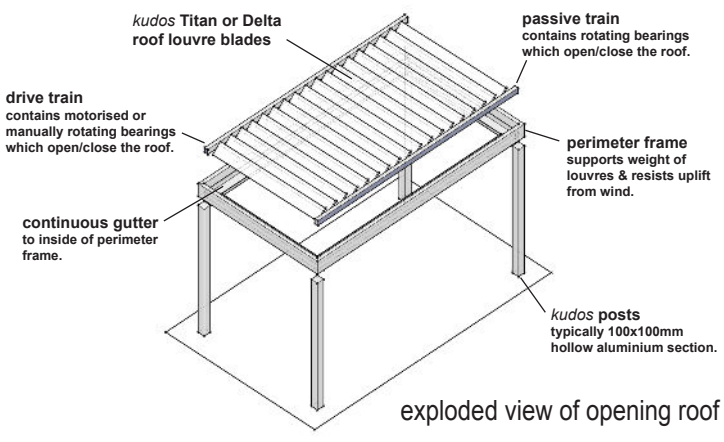
MAX. BEAM SPANS

kudos BEAM SPAN TABLE ; see Technical info. page 3

1. Work within your wind zone on the beam span table : **HIGH**
2. Select the nearest louvre length equal to or longer than your desired roof louvre length : **2.0m (nearest to 1.9m)**
3. Scan down to the max. beam span value equal to or longer than your reqd. roof length : **4.0m (nearest to reqd. 3.5m)**
4. scan across to the most suitable beam/s for your roof project: **200 x 50mm beam.**

Example A : typical free-standing *kudos* opening roof

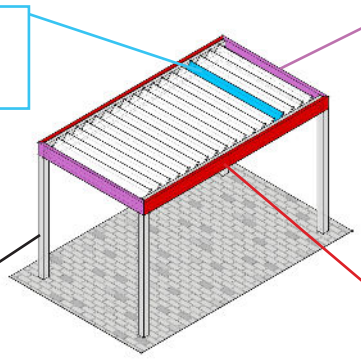




exploded view of opening roof

All *kudos* opening roofs :
Opening roof supporting structures / pin-pointing load-bearing beams .

Scenario 1 :
Free-standing opening roof on *kudos* posts



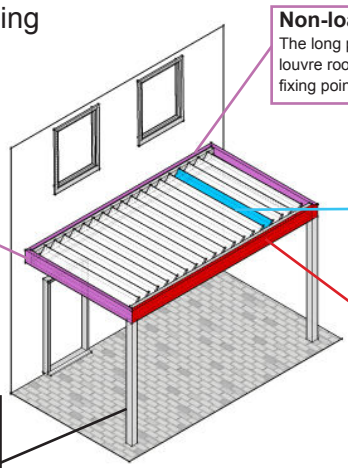
louvre span
If you increase your louvre span distance you will have to re-calculate the load on the load-bearing beams.

non-load bearing beams
The purple end beams complete the perimeter frame but support only their own weight. Beam span calculation is not necessary for these beams.

Post placements
If irregular post placements are required (for cantilever roofs for example) check with *kudos* for specific engineering for your job.

load bearing beams
The red beams support the ends of the roof louvres and equally share their weight.
Beam span calculation is essential for these load-bearing beams.

Scenario 2 :
Opening roof projecting from building



Non-load bearing beam
The long purple beam transfers half of the louvre roof weight to the house wall at solid fixing points.

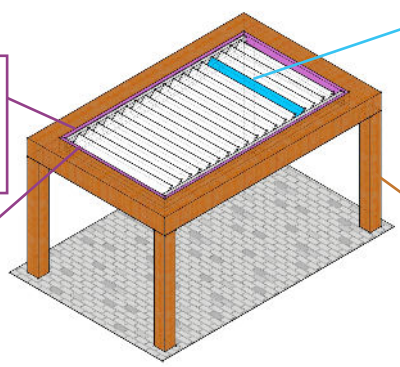
Non-load bearing beams
The purple end beams do not support the weight of the roof louvres.
Beam span calculation is not reqd. for these

louvre span
If you increase your louvre span distance you will have to re-calculate the load on the load-bearing beam.

load bearing beam
The red beam supports one end of the roof louvres, and equally shares the weight with the wall of the building.
Beam span calculation is essential for this beam.

Post quantity
The posts support half of the weight of the louvre roof, the building supports the remaining half.

Scenario 3 :
Opening roof within Pergola or ceiling opening



louvre span
Maximum louvre spans for the wind-zone should be available as the louvres have more than adequate support at their ends (provided the pergola/opening is a substantial structure).

Non-load bearing beams
All four sides of the purple perimeter frame are securely fixed to the pergola struture. This transfers the load of the opening roof to the pergola, through numerous solid fixing points.
Beam span calculation is not reqd. for these beams.

Pergola posts
Must be substantial enough to support the added weight of the louvre roof panel. Must have solid fixing at footings to counter wind up-lift on the roof.

Is a perimeter frame necessary ?
If the opening allotted to house the roof is flush, square,and robust (such as cast concrete or solid timber) a perimeter frame is not necessary. *kudos* simply attach the drive train and passive train directly to the inside faces of the opening.

All *kudos* opening roofs : Tables for calculating Louvre Spans & Beam Spans.

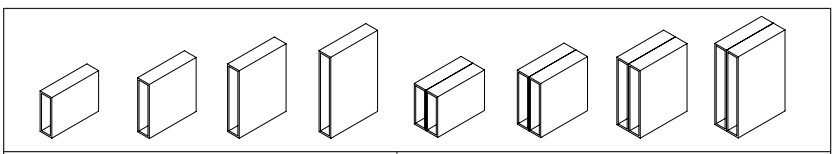
(see Technical information page 1 for how to use these tables)

Maximum roof louvre spans relative to wind-zone

	WIND ZONE	LOW	MEDIUM	HIGH	VERY HIGH
DELTA ROOF BLADE		4.4m	4.2m	4.0m	3.6m
TITAN ROOF BLADE		3.9m	3.7m	3.6m	3.4m

MAX. LOUVRE SPANS

Maximum roof beam spans relative to wind-zone



150x50	200x50	250x50	300x50	2/150x50	2/200x50	2/250x50	2/300x50
SINGLE BEAMS				DOUBLE BEAMS			

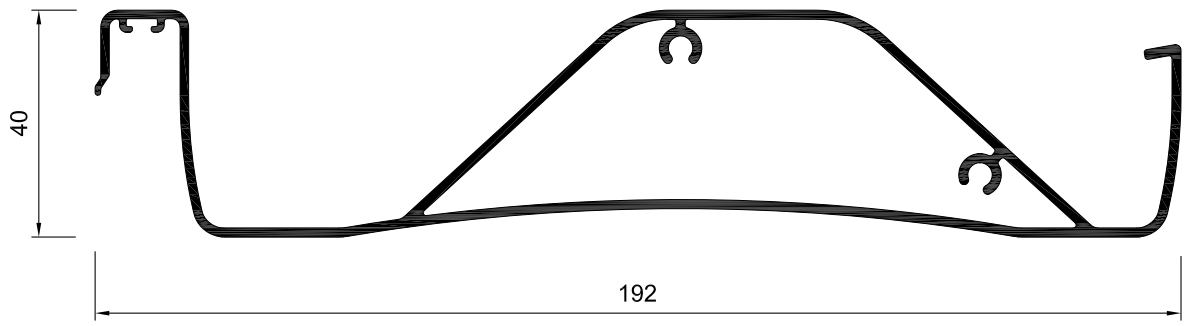
WIND ZONE	SINGLE BEAM TYPE	LENGTH OF LOUVRE SINGLE BEAM IS SUPPORTING							
		1.2m	*1.6m*	*2.0m*	*2.4m*	*2.8m*	*3.2m*	*3.6m*	*4.0m*
LOW	150 x 50m	4.6m	4.4m	3.8m	3.6m	3.4m	3.2m	3.2m	3.0m
	200 x 50mm	5.8m	5.4m	5.0m	4.6m	4.4m	4.2m	4.0m	3.8m
	250 x 50mm	7.2m	6.6m	6.0m	5.8m	5.4m	5.2m	5.0m	4.8m
	300 x 50mm	8.2m	7.6m	7.2m	6.6m	6.4m	6.0m	5.8m	5.6m
MEDIUM	150 x 50m	4.2m	3.8m	3.4m	3.2m	3.2m	3.0m	2.8m	2.8m
	200 x 50mm	5.4m	4.8m	4.6m	4.2m	4.0m	3.8m	3.6m	3.6m
	250 x 50mm	6.6m	6.0m	5.6m	5.2m	5.0m	4.6m	4.6m	4.4m
	300 x 50mm	7.6m	7.0m	6.6m	6.4m	5.8m	5.6m	5.4m	5.2m
HIGH	150 x 50m	3.8m	3.4m	3.2m	3.0m	2.8m	2.6m	2.6m	2.4m
	200 x 50mm	4.8m	4.4m	4.0m	3.8m	3.6m	3.4m	3.4m	3.2m
	250 x 50mm	5.8m	5.4m	5.0m	4.8m	4.4m	4.2m	4.0m	3.8m
	300 x 50mm	6.8m	6.2m	5.8m	5.4m	5.2m	5.0m	4.8m	4.4m
VERY HIGH	150 x 50m	3.4m	3.2m	2.8m	2.8m	2.6m	2.4m	2.4m	2.2m
	200 x 50mm	4.4m	4.0m	3.8m	3.4m	3.4m	3.2m	3.0m	3.0m
	250 x 50mm	5.4m	4.8m	4.6m	4.2m	4.0m	3.8m	3.8m	3.6m
	300 x 50mm	6.2m	5.8m	5.4m	5.0m	4.8m	4.6m	4.4m	4.2m

MAX. BEAM SPANS

WIND ZONE	DOUBLE BEAM TYPE	LENGTH OF LOUVRE DOUBLE BEAM IS SUPPORTING							
		1.2m	*1.6m*	*2.0m*	*2.4m*	*2.8m*	*3.2m*	*3.6m*	*4.0m*
LOW	2 / 150 x 50m	5.8m	5.2m	4.8m	4.6m	4.4m	4.2m	4.0m	3.8m
	2 / 200 x 50mm	7.0m	6.8m	6.2m	5.8m	5.6m	5.4m	5.2m	5.0m
	2 / 250 x 50mm	8.6m	8.0m	7.6m	7.2m	6.8m	6.6m	6.2m	6.0m
	2 / 300 x 50mm	9.0m	9.0m	9.0m	8.4m	8.0m	7.6m	7.4m	7.2m
MEDIUM	2 / 150 x 50m	5.2m	4.8m	4.4m	4.2m	4.0m	3.8m	3.8m	3.6m
	2 / 200 x 50mm	6.8m	6.2m	5.8m	5.4m	5.0m	4.8m	4.6m	4.6m
	2 / 250 x 50mm	8.0m	7.6m	7.0m	6.6m	6.2m	6.0m	5.8m	4.8m
	2 / 300 x 50mm	9.0m	8.8m	8.2m	7.8m	7.4m	7.0m	6.8m	6.6m
HIGH	2 / 150 x 50m	4.8m	4.2m	4.0m	3.8m	3.6m	3.4m	3.2m	3.2m
	2 / 200 x 50mm	6.0m	5.6m	5.2m	4.8m	4.6m	4.4m	4.2m	4.0m
	2 / 250 x 50mm	7.4m	6.8m	6.2m	5.8m	4.8m	4.8m	4.8m	4.8m
	2 / 300 x 50mm	8.8m	8.0m	7.4m	7.0m	6.6m	6.2m	6.0m	5.8m
VERY HIGH	2 / 150 x 50m	4.4m	4.0m	3.6m	3.4m	3.2m	3.2m	3.0m	2.8m
	2 / 200 x 50mm	5.6m	5.0m	4.8m	4.4m	4.2m	4.0m	3.8m	3.8m
	2 / 250 x 50mm	6.8m	6.2m	5.8m	4.8m	4.8m	4.8m	4.8m	4.6m
	2 / 300 x 50mm	8.0m	7.4m	6.8m	6.4m	6.0m	5.8m	4.8m	4.8m

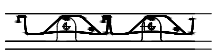
MAX. BEAM SPANS

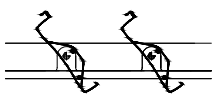
DELTA opening roof : technical information (i).



WIND ZONE	LOW	MEDIUM	HIGH	VERY HIGH
DELTA ROOF BLADE	4.4m	4.2m	4.0m	3.6m
	MAX. DELTA LOUVRE BLADE SPANS			

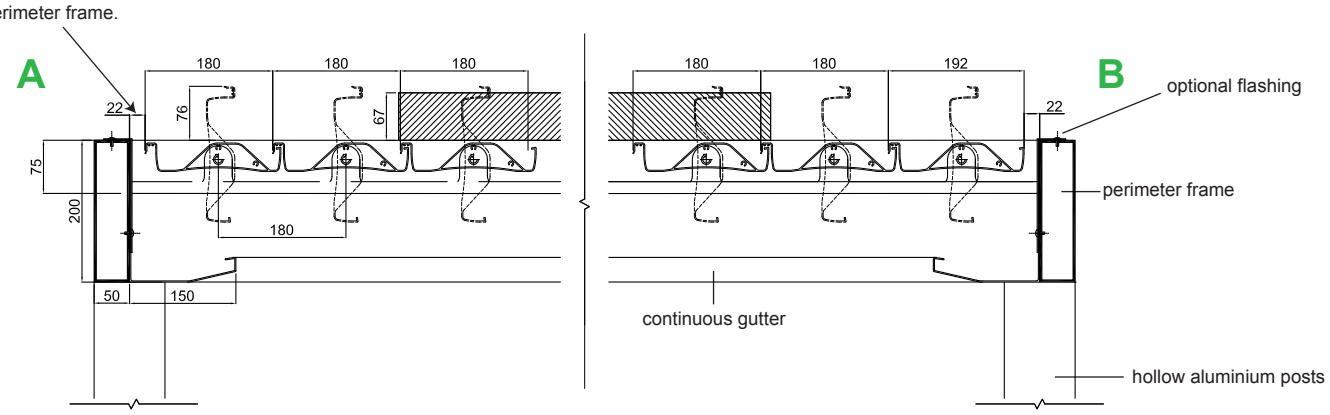
Blade weight per lineal metre : 1.950 kg
Blade centres : 180mm
Individual blade width : 192mm
Blade cover : 180mm
Weight per square metre : 10.8kg / m²


Closed blades (water-tight)

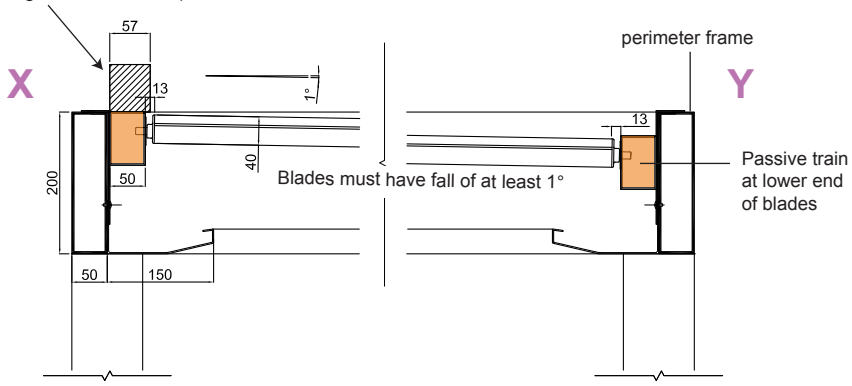

Open blades (fine weather)

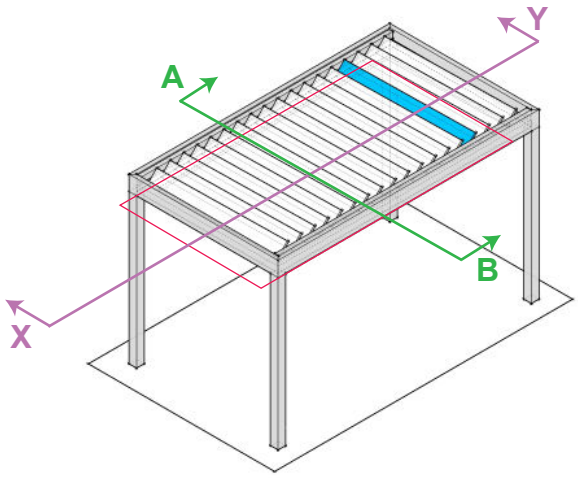

Max. opening angle 160º
(with 15mm clearance between blades)

22mm **minimum** clearance between blades and perimeter frame.



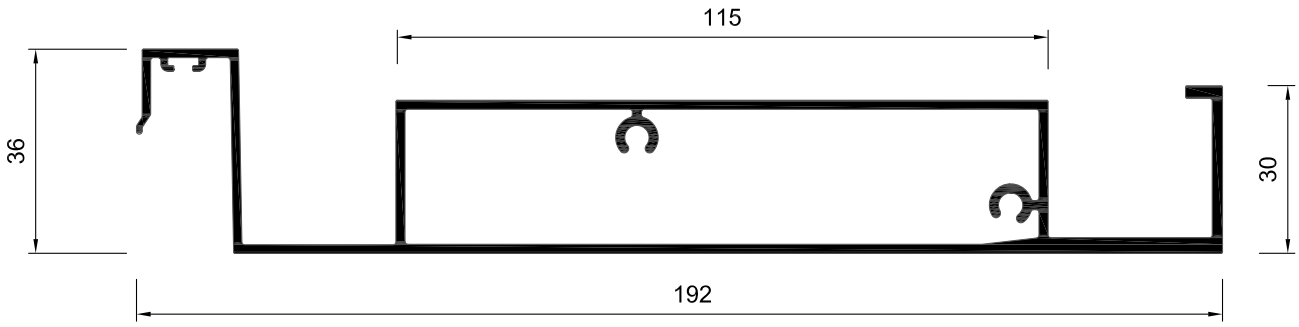
Motor above drive train (at higher end of blades)





Motorised Delta roof shown hand operable option also available.

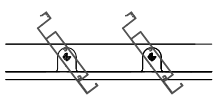
TITAN opening roof : technical information.



WIND ZONE	LOW	MEDIUM	HIGH	VERY HIGH
TITAN ROOF BLADE	3.9m	3.7m	3.6m	3.4m
	MAX. TITAN LOUVRE BLADE SPANS			

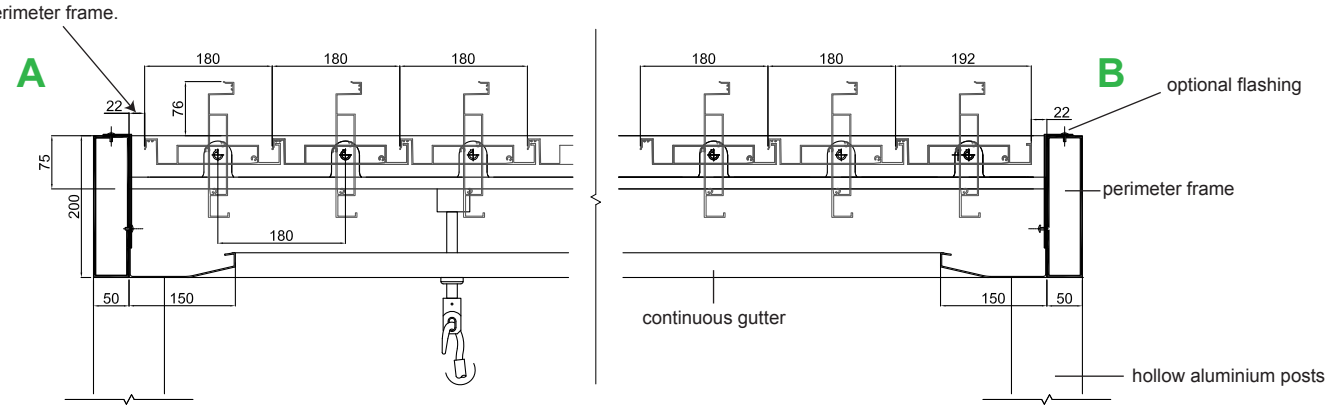
Blade weight per lineal metre : 2.284 kg
Blade centres : 180mm
Individual blade width : 192mm
Blade cover : 180mm
Weight per square metre : 12.7 kg / m²

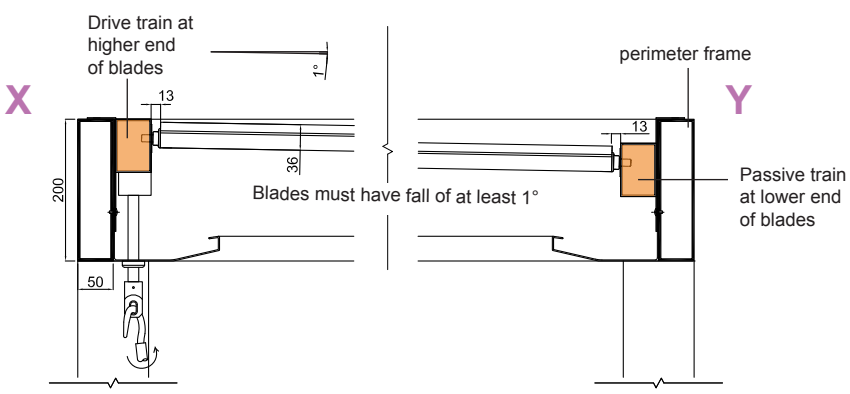

Closed blades (water-tight)

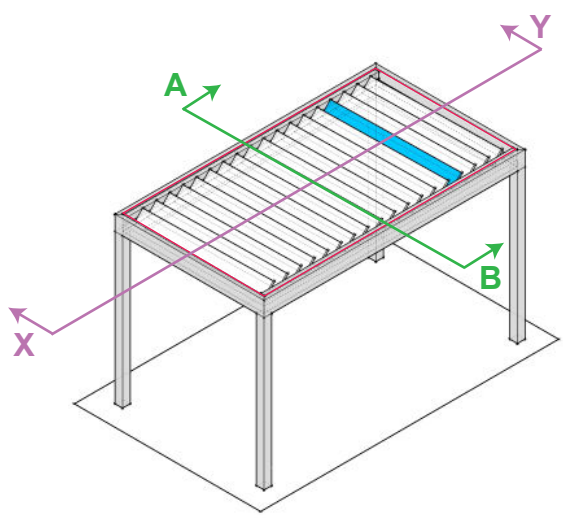

Open blades (fine weather)


Max. opening angle 165º
(with 15mm clearance between blades)

22mm **minimum** clearance between blades and perimeter frame.







Hand operable Titan roof shown
Motorised option also available.

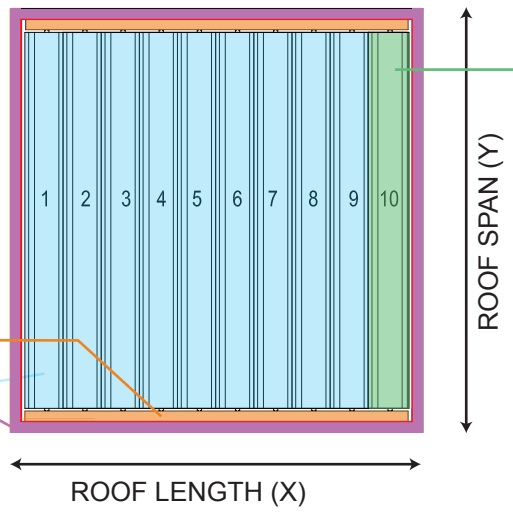
TITAN / DELTA opening roof : setting out louvre roof plans

CALCULATING ROOF WIDTH (Y)

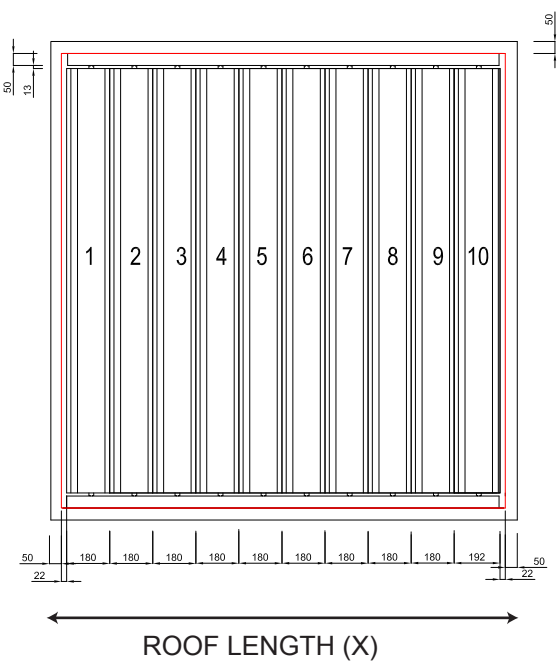
Any desired roof span is easily achieved by trimming roof louvres to suit.
(provided max. span for your wind-zone isn't exceeded).

ROOF SPAN CALCULATION (Y) :

2 x 50mm (perimeter frame if reqd.)
2 x 50mm (drive train + passive train)
2 x 13mm clearance at louvre ends
\+ TITAN / DELTA roof louvre *(length cut to suit)*
ROOF SPAN (Y)



NOTE :
In plan all TITAN and DELTA roof louvre blades have a 180mm covering width, excluding the end louvre (shown in green) which covers a width of 192mm (as there is no following louvre concealing any of it).



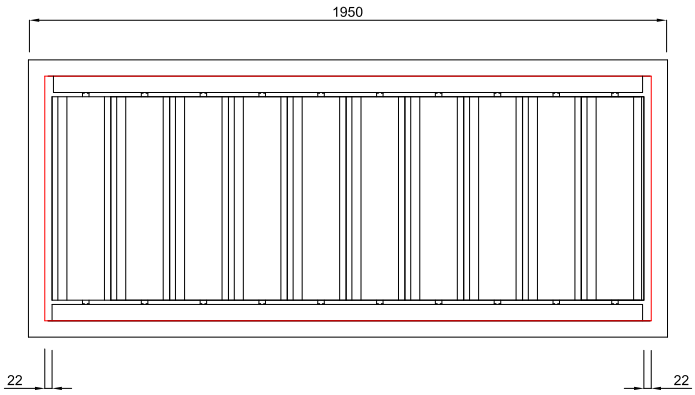
CALCULATING ROOF LENGTH (X)

Using the *kudos* roof module.

In this case you base your roof width on the number of roof louvres you wish to use. In the example at left 10 TITAN roof louvres have been used. This will generate the following roof length:

ROOF LENGTH CALCULATION (X)
*(using the **kudos module** means with no trimmed louvres and standard min. clearance of 22mm at end louvres - as at left).*

2 x 50mm (perimeter frame - if reqd.)
2 x 22mm (minimum clearance gaps between end louvres and perimeter frame)
9 x 180mm TITAN louvres (1st nine in plan)
\+ 1 x 192mm TITAN louvre (last louvre always measured at 192mm)
ROOF LENGTH (X) = 1956mm



SETTING OUT A NON - MODULAR ROOF

Setting out a roof plan to an **exact** pre-determined roof length (in this case 1950mm).

At left 10 DELTA roof louvres have been used, but the desired roof length of 1950mm is slightly less than the normal roof module calculation for 10 roof louvres; 1956mm *(as above for roof length X)*.

In this case a trimmed louvre will be used to create an exact roof length as specified of 1950mm.

The 22mm clearance gaps can also be increased if a roof length slightly longer than a normal module calculation is required.