



The image shows a 3D cutaway of a window system. On the left, a vertical grey frame is visible. Two horizontal louvre blades are shown in a partially open position, revealing the internal mechanism. The blades are light grey with dark grey edges. The background is white with a faint, circular watermark logo.

# Toren

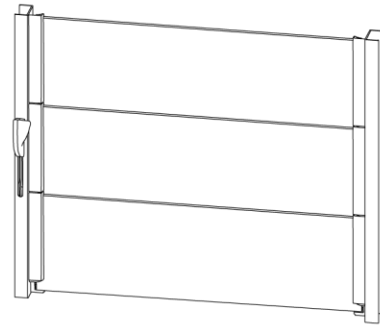
## Louvre Windows

- *Open joint concept in weathering*
- *Straight-edge design and clean define looks*

# Height Tables

## 152 mm Blade Louvre Height

No. of Blades	Height (mm) No Weatherstrip	Height (mm) with Weatherstrip
2	304.8	324.8
3	444.5	464.5
4	584.2	604.2
5	723.9	743.9
6	863.6	883.6
7	1003.3	1023.3
8	1143.0	1163.0
9	1282.7	1302.7
10	1422.4	1442.4
11	1562.1	1582.1
12	1701.8	1721.8
13	1841.5	1861.5
14	1981.2	2001.2
15	2120.9	2140.9
16	2260.6	2280.6
17	2400.3	2420.3
18	2540.0	2560.0
19	2679.7	2699.7
20	2819.4	2839.4
21	2959.1	2979.1

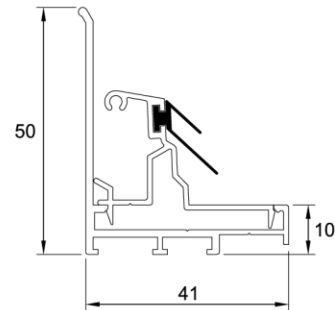


Standard louvre height (ht) for 152 mm blades can be computed as follows:

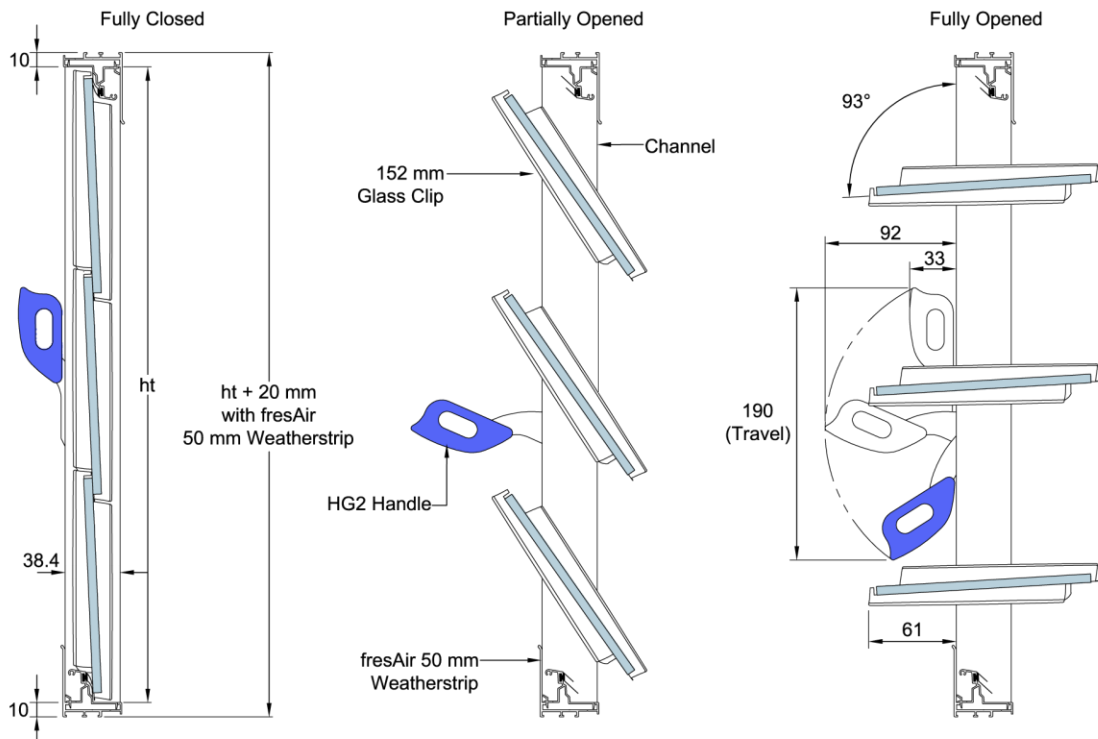
$$ht = (nb \times 139.7) + 25.4$$

where: ht - height of frame nb - number of blades

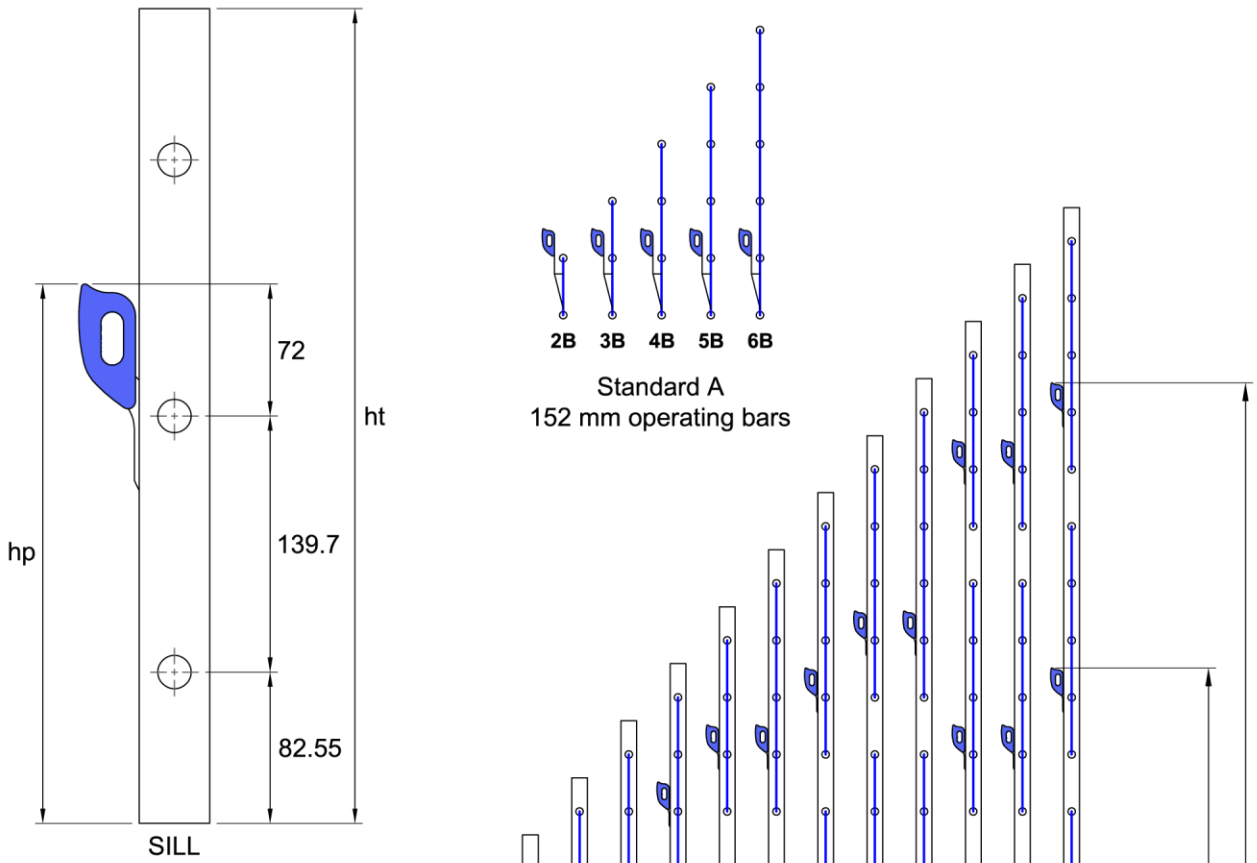
### fresAir 50 mm Weatherstrip



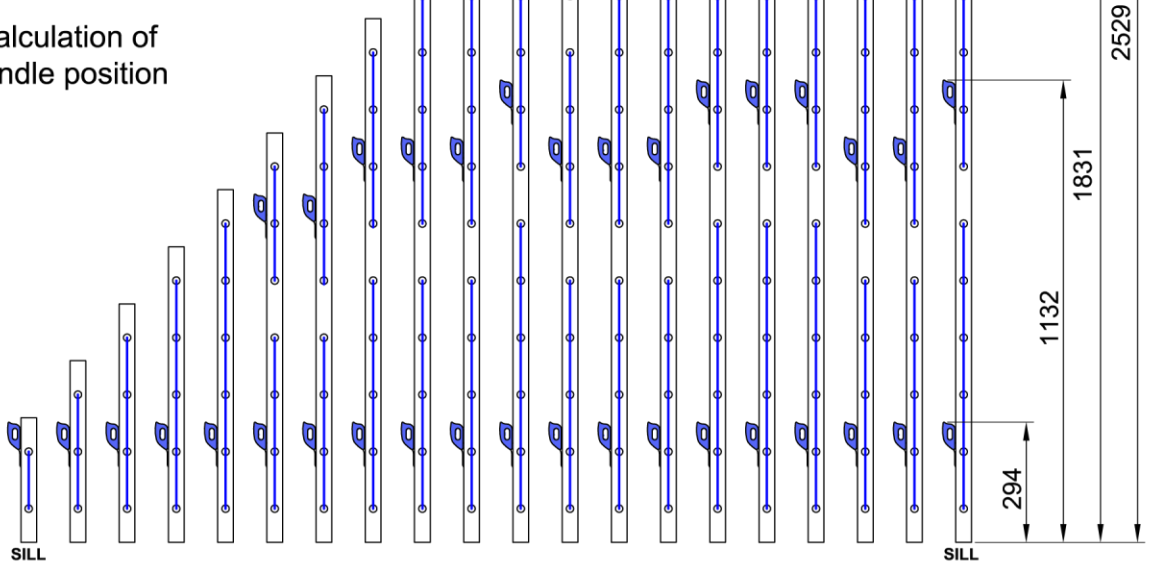
## 152 mm Louvre Gallery



# 152 mm Louvre Handle Positions And Controls Standard A



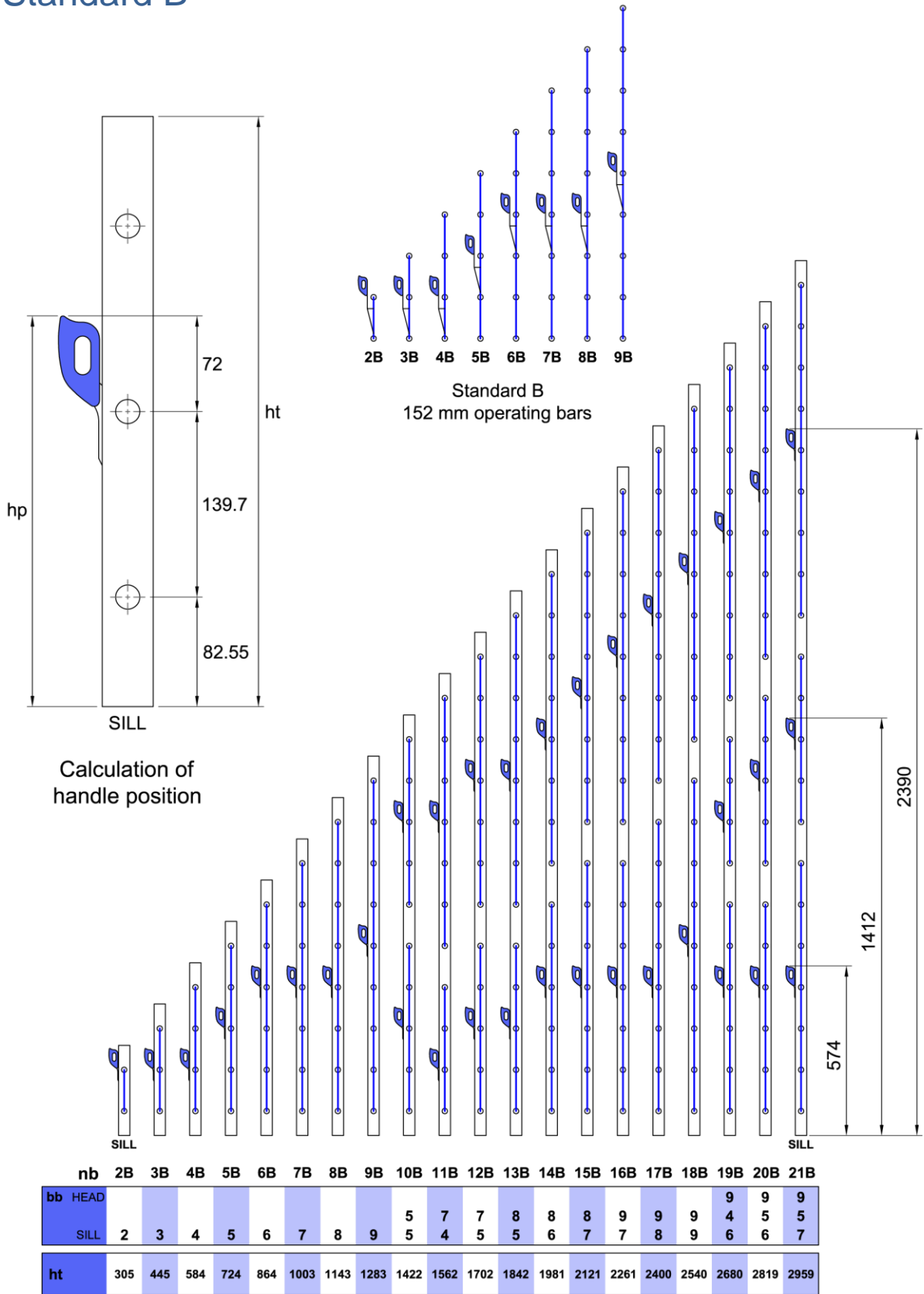
Calculation of handle position



nb	2B	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	13B	14B	15B	16B	17B	18B	19B	20B	21B
<b>bb HEAD</b>												4	4	5	5	5	6	4	5	5
<b>SILL</b>	2	3	4	5	6	3	4	4	5	6	6	4	5	5	5	6	6	5	5	6
<b>ht</b>	305	445	584	724	864	1003	1143	1283	1422	1562	1702	1842	1981	2121	2261	2400	2540	2680	2819	2959

**Legend:** nb - number of blades    hp - handle position    bb - banks of blades    ht - height of frame

# 152 mm Louvre Handle Positions And Controls Standard B

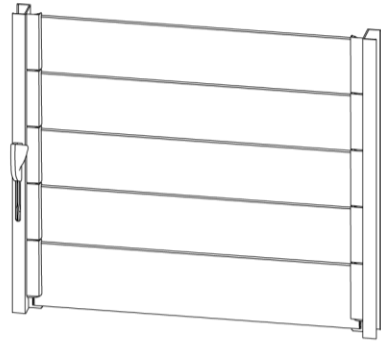


**Legend:** nb - number of blades    hp - handle position    bb - banks of blades    ht - height of frame

# Height Tables

## 102 mm Blade Louvre Height

No. of Blades	Height (mm) No Weatherstrip	Height (mm) with Weatherstrip
3	292.1	312.1
4	381.0	401.0
5	469.9	489.9
6	558.8	578.8
7	647.7	667.7
8	736.6	756.6
9	825.5	845.5
10	914.4	934.4
11	1003.3	1023.3
12	1092.2	1112.2
13	1181.1	1201.1
14	1270.0	1290.0
15	1358.9	1378.9
16	1447.8	1467.8
17	1536.7	1556.7
18	1625.6	1645.6
19	1714.5	1734.5
20	1803.4	1823.4
21	1892.3	1912.3

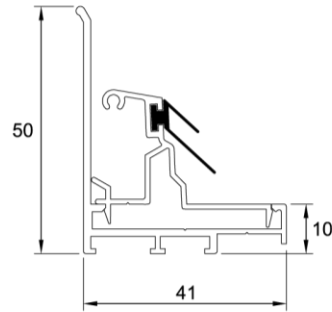


Standard louvre height (ht) for 102 mm blades can be computed as follows:

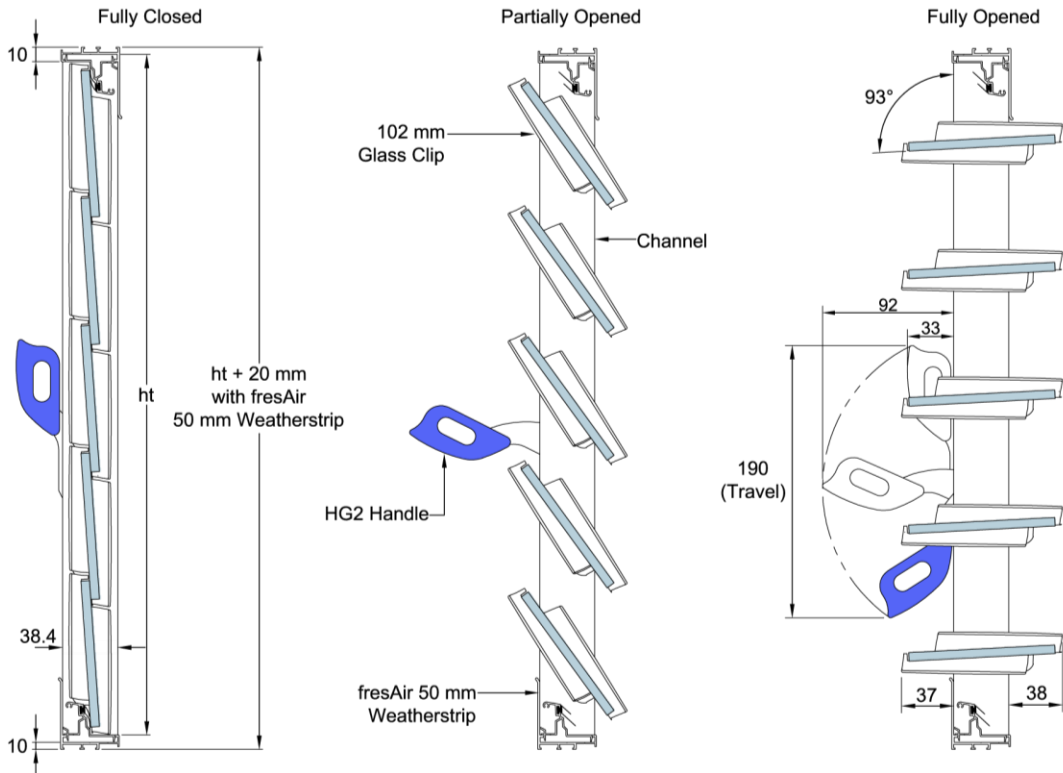
$$ht = (nb \times 88.9) + 25.4$$

where: ht - height of frame      nb - number of blades

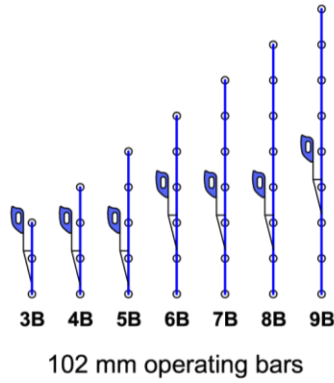
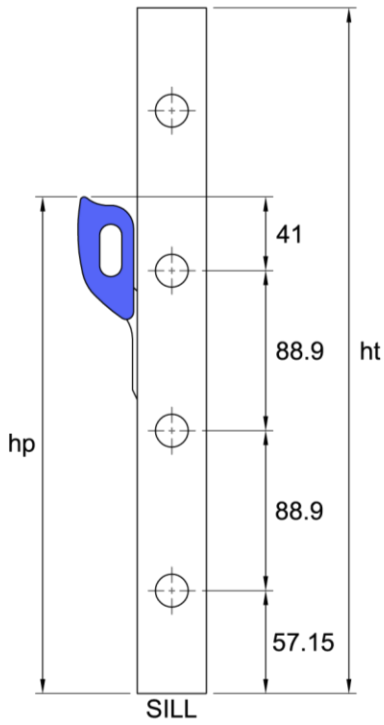
## fresAir 50 mm Weatherstrip



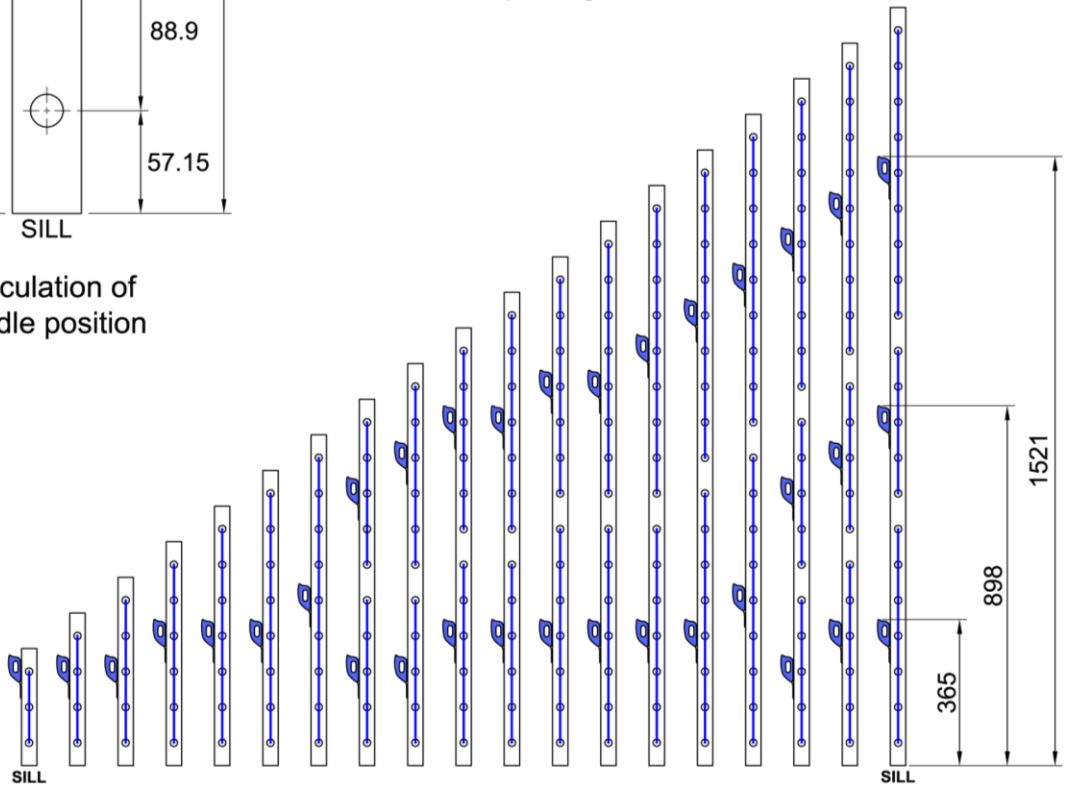
## 102 mm Louvre Gallery



# 102 mm Louvre Handle Positions And Controls



Calculation of handle position



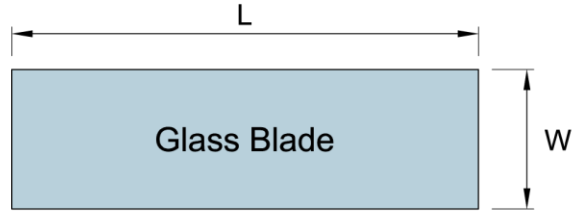
nb	3B	4B	5B	6B	7B	8B	9B	10B	11B	12B	13B	14B	15B	16B	17B	18B	19B	20B	21B	
<b>bb HEAD</b>								5	6	6	7	7	8	9	9	9	9	5	5	5
<b>SILL</b>	3	4	5	6	7	8	9	5	5	6	6	7	7	7	8	9	5	6	7	
<b>ht</b>	292	381	470	559	648	737	826	914	1003	1092	1181	1270	1359	1448	1537	1626	1715	1803	1892	

**Legend:** nb - number of blades    hp - handle position    bb - banks of blades    ht - height of frame

# Glass Blade Calculations

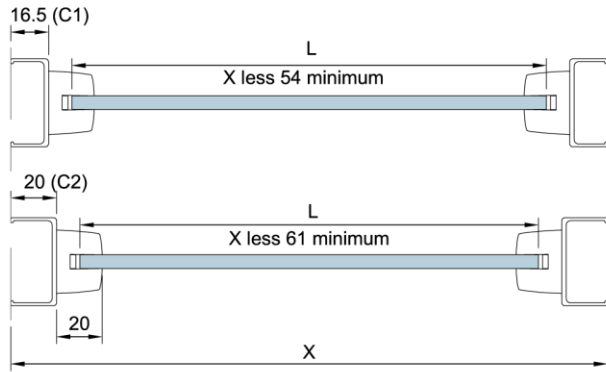
## Blade Width (W)

- 152 mm Clips : 150 mm - 151 mm (MAX)
- 102 mm Clips : 101 mm - 102 mm (MAX)



## Blade Length (L)

- C1 Channel (16.5 mm height)
- $L = X \text{ less } 54 \text{ mm}$



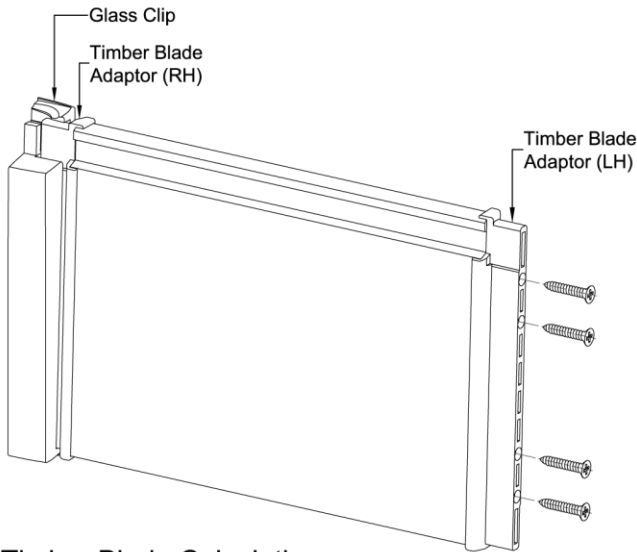
- C2 Channel (20 mm height)
- $L = X \text{ less } 61 \text{ mm}$

where: L = Glass Blade Length  
X = Jamb to Jamb

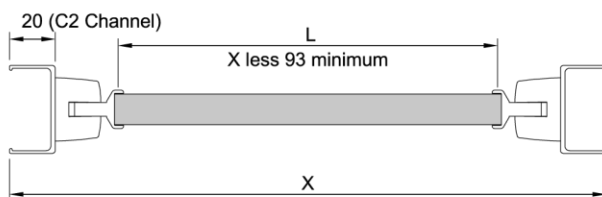
Caution : Allowable Tolerance:  $\pm 0.7 \text{ mm}$ , oversized blades will bow the clips and result in stiff operations.

# Timber Blade Adaptors

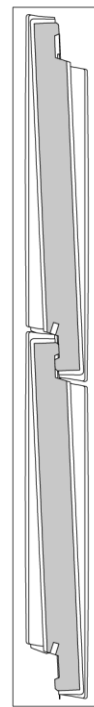
Available for 102 mm and 152 mm timber blades



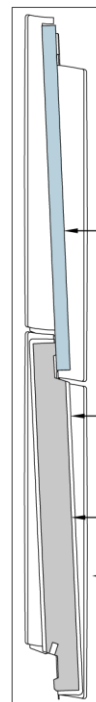
## Timber Blade Calculation (with timber adaptors)



where: L = Timber Blade Length X = Jamb to Jamb

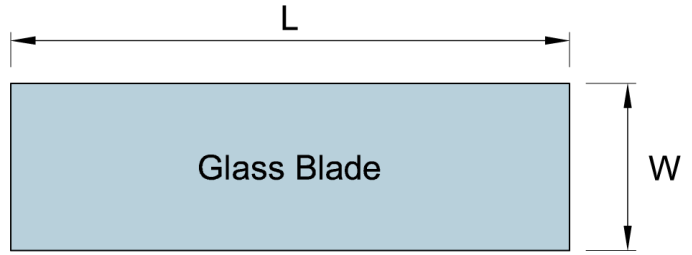
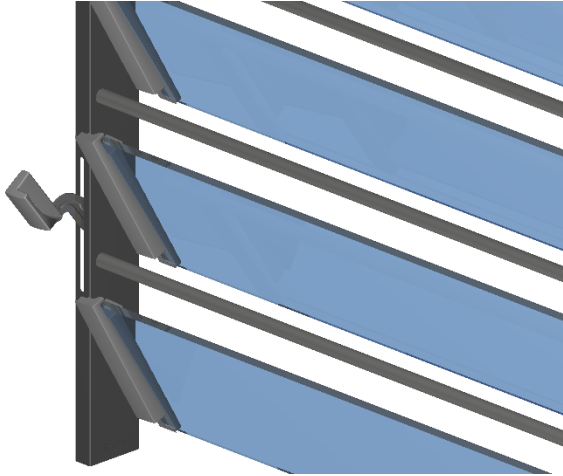


Timber Blade to Timber Blade



Timber Blade to Glass Blade

# Burglar Bar System for Louvre Windows

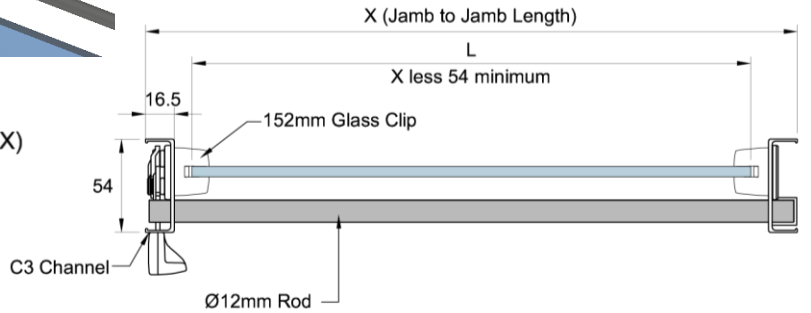


Blade Width ( $W$ )  
 152 mm Clips : 150 mm - 151 mm (MAX)

Blade Length ( $L$ )  
 C3 Channel (16.5 mm height)  
 $L = X$  less 54 mm

where:  $L$  = Glass Blade Length  
 $X$  = Jamb to Jamb

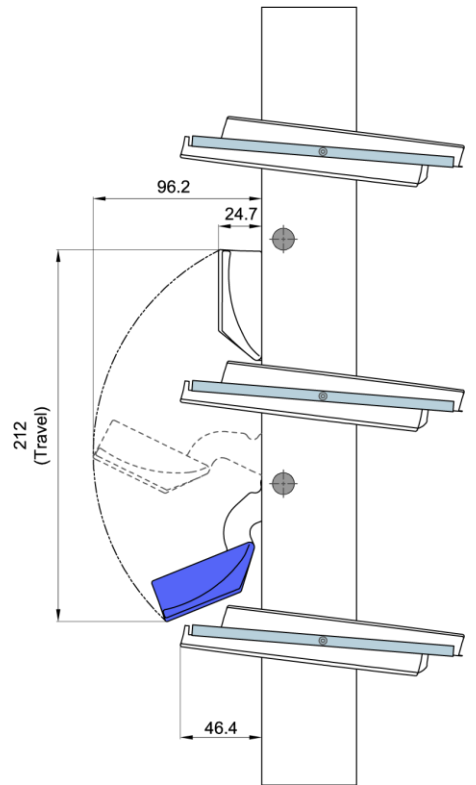
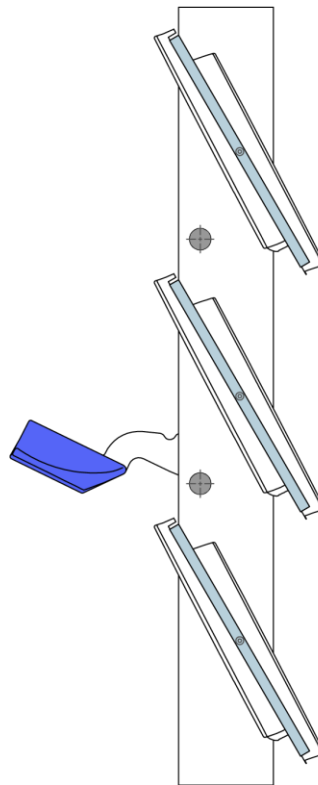
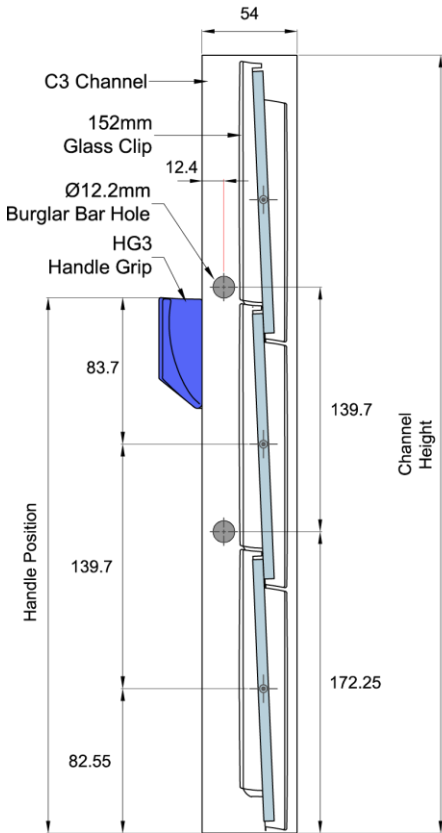
\* Louvre blade and  $\varnothing 12$ mm rod not supplied



Fully Closed

Partially Opened

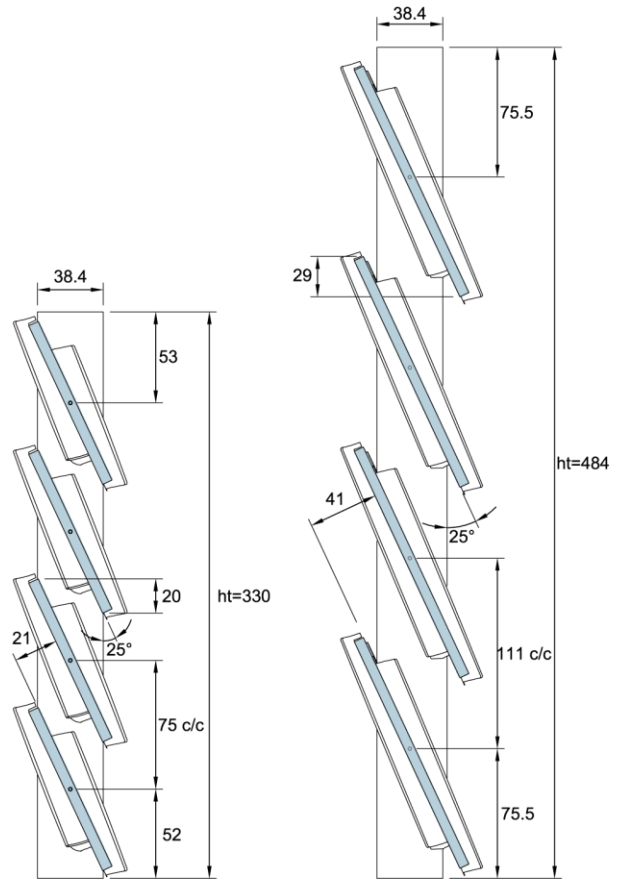
Fully Opened



# Fixed Clip Louvres

Height Table for Fixed Clips

No. of Blades	152 mm	102mm
2	262.1	-
3	373.1	255
4	484.1	330
5	595.1	405
6	706.1	480
7	817.1	555
8	928.1	630
9	1039.1	705
10	1150.1	780
11	1261.1	855
12	1372.1	930
13	1483.1	1005
14	1594.1	1080
15	1705.1	1155
16	1816.1	1230
17	1927.1	1305
18	2038.1	1380
19	2149.1	1455
20	2260.1	1530
21	2371.1	1605

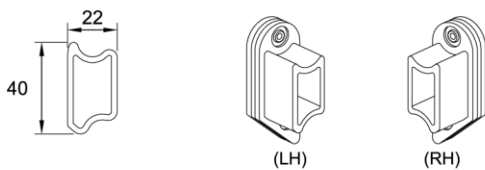


Fixed Clip 102 mm for 6 mm glass

Fixed Clip 152 mm for 6 mm glass

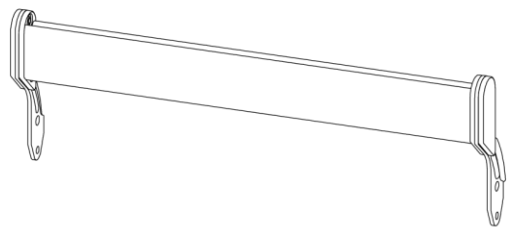
# Torsion Bar and Adaptors

For large span louvre windows

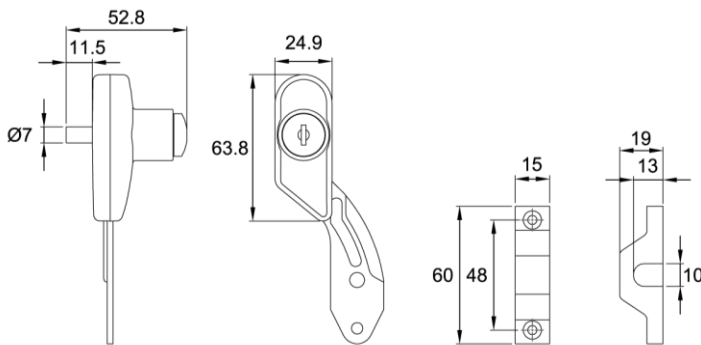


Bar Profile

Adaptors

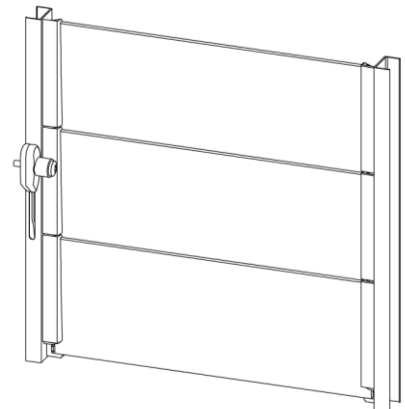


# Handle Locks and Keepers



Lock (LH)

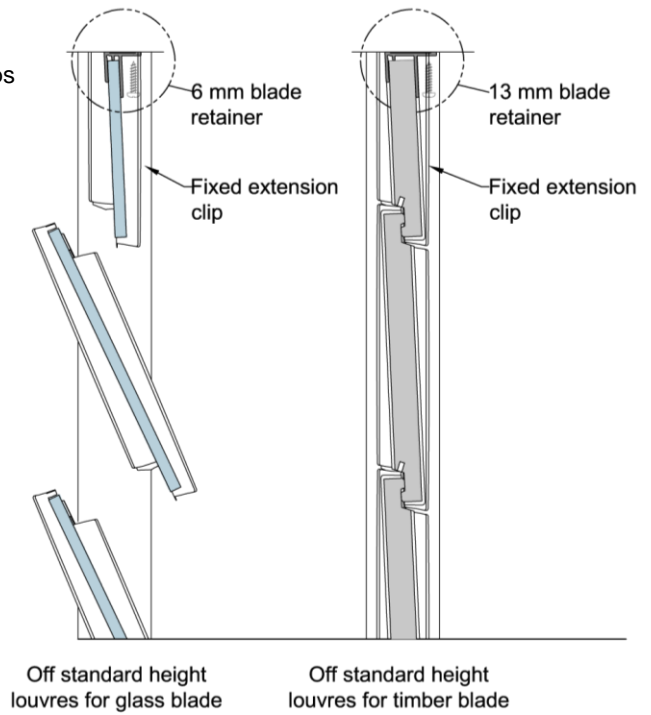
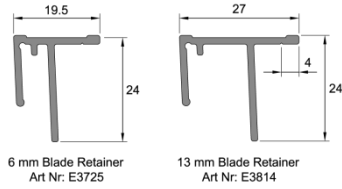
Keeper



# Blade Retainers in Extruded Aluminium Profile

## Applications

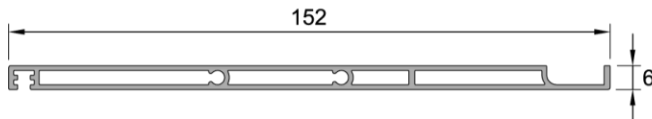
- Off standard height louvres
- Strengthen narrow width blades in extension clips



## Blade Options

### Extruded Aluminium Blade

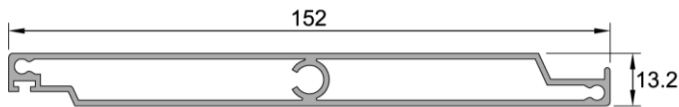
152 mm X 6 mm



102 mm X 6 mm

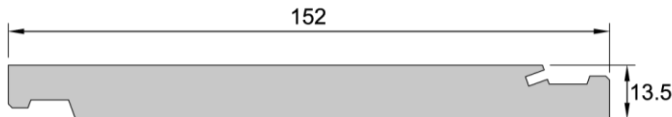


152 mm X 13 mm



### Timber Blade

152 mm



102 mm

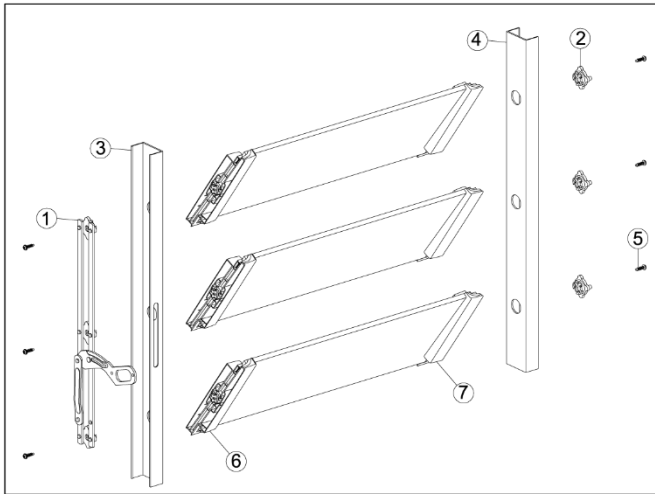


# Configuration and Construction Options

A louvre window comprising of a left hand and right hand channels with corresponding mounting blade holders or clip, activate to rotation by a handle attached to an operating bar mechanism and bearings on either side channels.

## A STANDARD

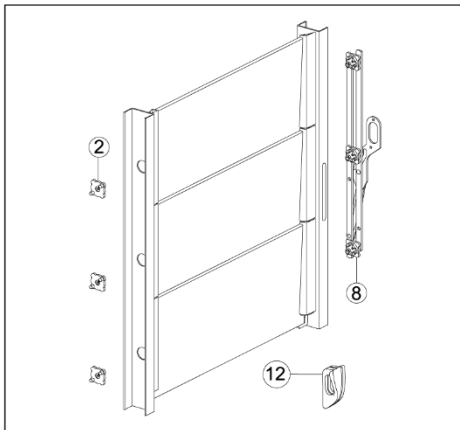
Left hand operating bar on left channel and plain bearings on right channel.



- ① Left Hand Operating Bar
- ② Plain Bearing
- ③ Left Channel
- ④ Right Channel
- ⑤ Hi-Low Screw
- ⑥ Left Clip
- ⑦ Right Clip
- ⑧ Right Hand Operating Bar
- ⑨ Left Linkage Bar
- ⑩ Right Linkage Bar
- ⑪ Left Handle Grip
- ⑫ Right Handle Grip

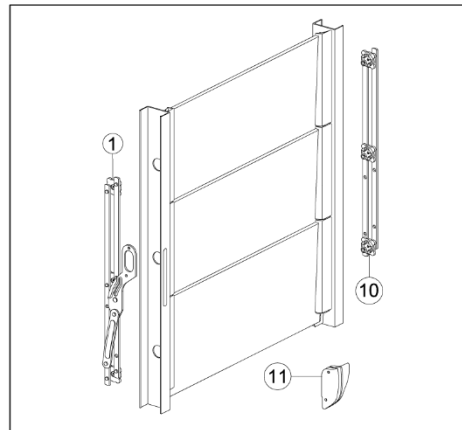
## B RIGHT HAND CONTROL

Right hand operating bar on right channel and plain bearings on left channel.



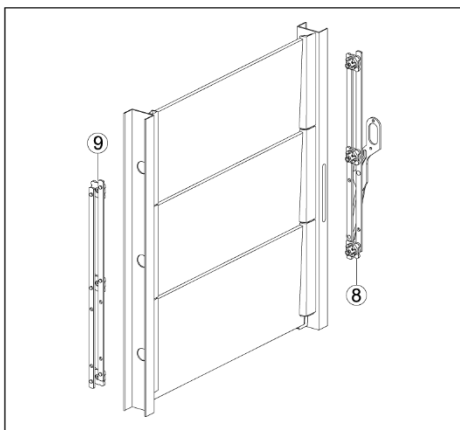
## C LEFT HAND CONTROL WITH LINKAGE BAR

Left hand operating bar on left channel and linkage bar on right channel.



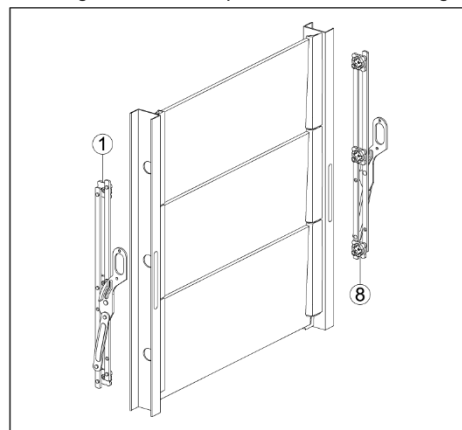
## D RIGHT HAND CONTROL WITH LINKAGE BAR

Right hand operating bar on right channel and linkage bar on left channel.



## E LEFT AND RIGHT HAND CONTROL

Left hand operating bar on left channel and right hand operating bar on right channel and option to receive connecting torsion bar.



\*All illustrations are viewed from INSIDE

# fresAir™

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