

# MULTIFUNCTIONAL SURFACE-MOUNTED ROLLER SHUTTER

VR150

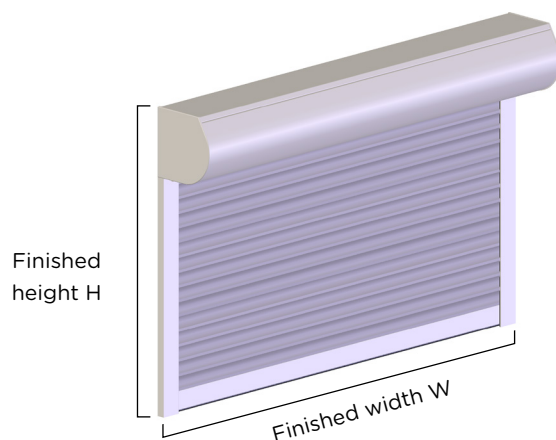
*art.no. 61716*

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## 1. FINISHED SIZES

Finished width W = width including guide rails (excluding box extension).  
 Finished height H = height including consoles.



**Figure 1:**  
**Finished sizes**

Regarding to the wall in W and H, the play is deducted by the client!  
 The maximum values for width, height, and area depending on the chosen slat, can be found on page 10 in table 8.

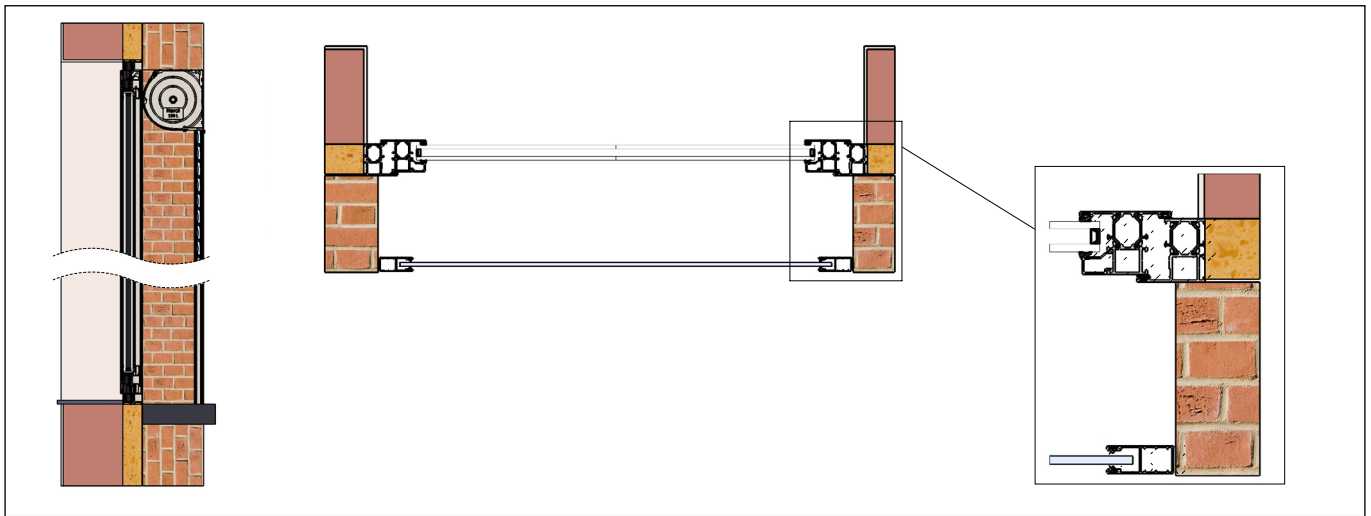
### **Note:**

The total width from left to right console can sometimes be a millimetre wider relative to the width of the rear guide rails.

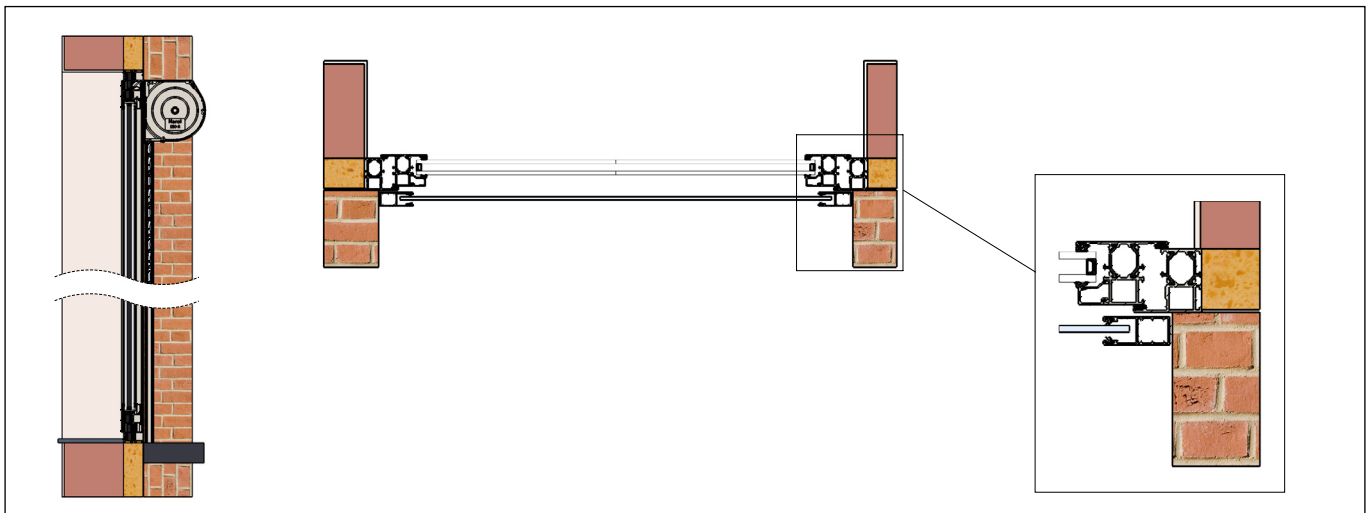
## 2. FITTING OPTIONS

- Four fitting options: see Figure 2.
  - In the window opening: assembly types 1 and 2.
  - On the window opening: assembly types 3 and 5.
- The maximum dimensions (see table 8) are based on mounting in front of a window, which means at most at 150 mm distance from the window.
- Free-standing installations (such as garage openings) are not recommended.

**Type 1: Plan:**



**Type 2: Plan:**



**Type 1:**

**Properties:**

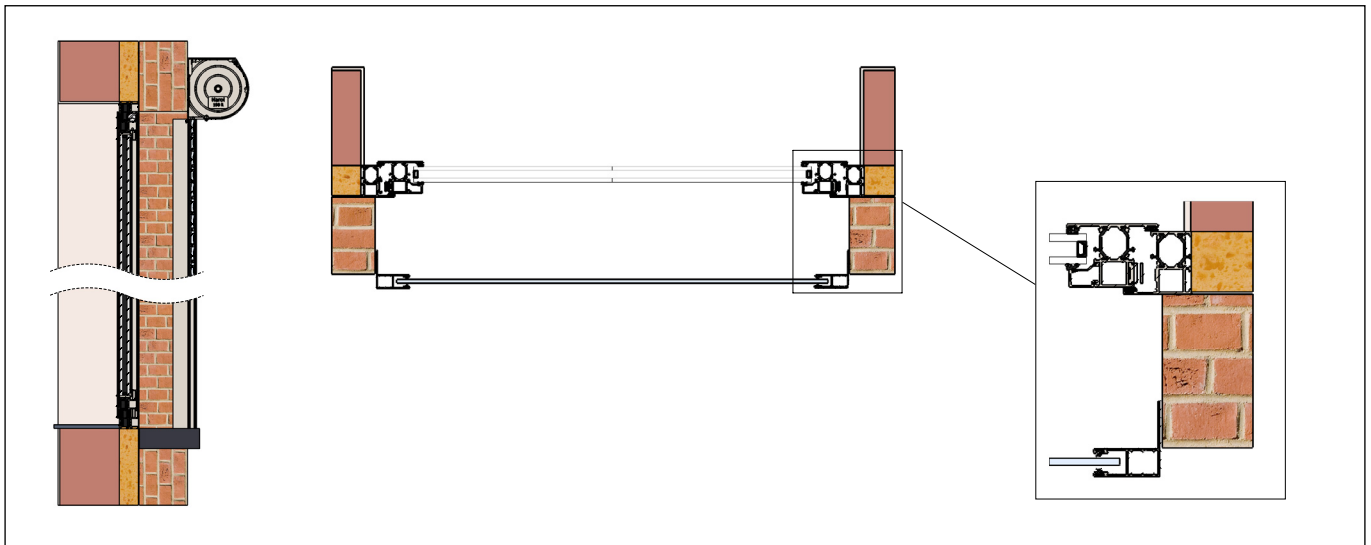
- Right-hand roller
- Curtain front.
- Option: Tape exit along the top of the box.
- Guide rails 117 or 118, between the wall.
- Box in the opening.

**Type 2:**

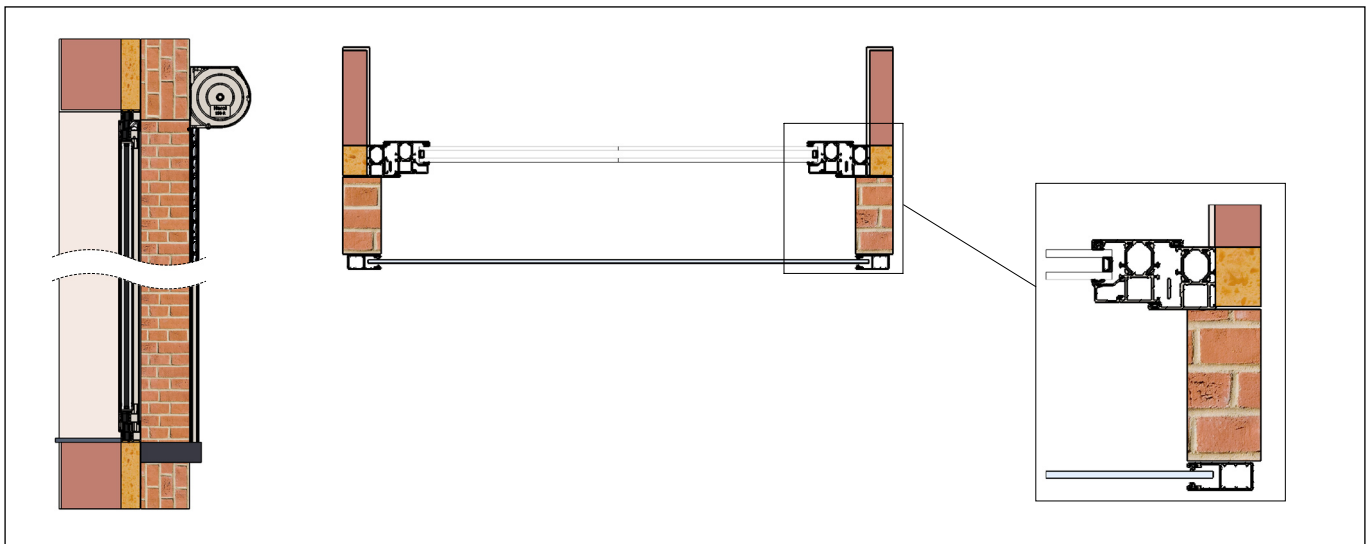
**Properties:**

- Left-hand roller
- Curtain back.
- Option: Tape exit along the bottom of the box.
- Guide rails 117 or 118, between the wall.
- Box in the opening.

## Type 3: Plan:



## Type 5: Plan:



### Type 3:

#### Properties:

- Left-hand roller
- Curtain back.
- Tape exit along the bottom of the box.
- Guide rails 117, between the wall.
- Box on the wall.

### Type 5:

#### Properties:

- Left-hand roller
- Curtain back.
- Tape exit along the bottom of the box.
- Guide rails 118, on the wall.
- Box on the wall.

Figure 2:  
Fitting options

### 3. THE BOX

**Models:**

– **Model 'S':**

- Bevelled inspection cover.
- Aluminium strip, profiled and folded.
- Available for box sizes 137, 150, 165, 180, 205 and 230.

– **Model 'P':**

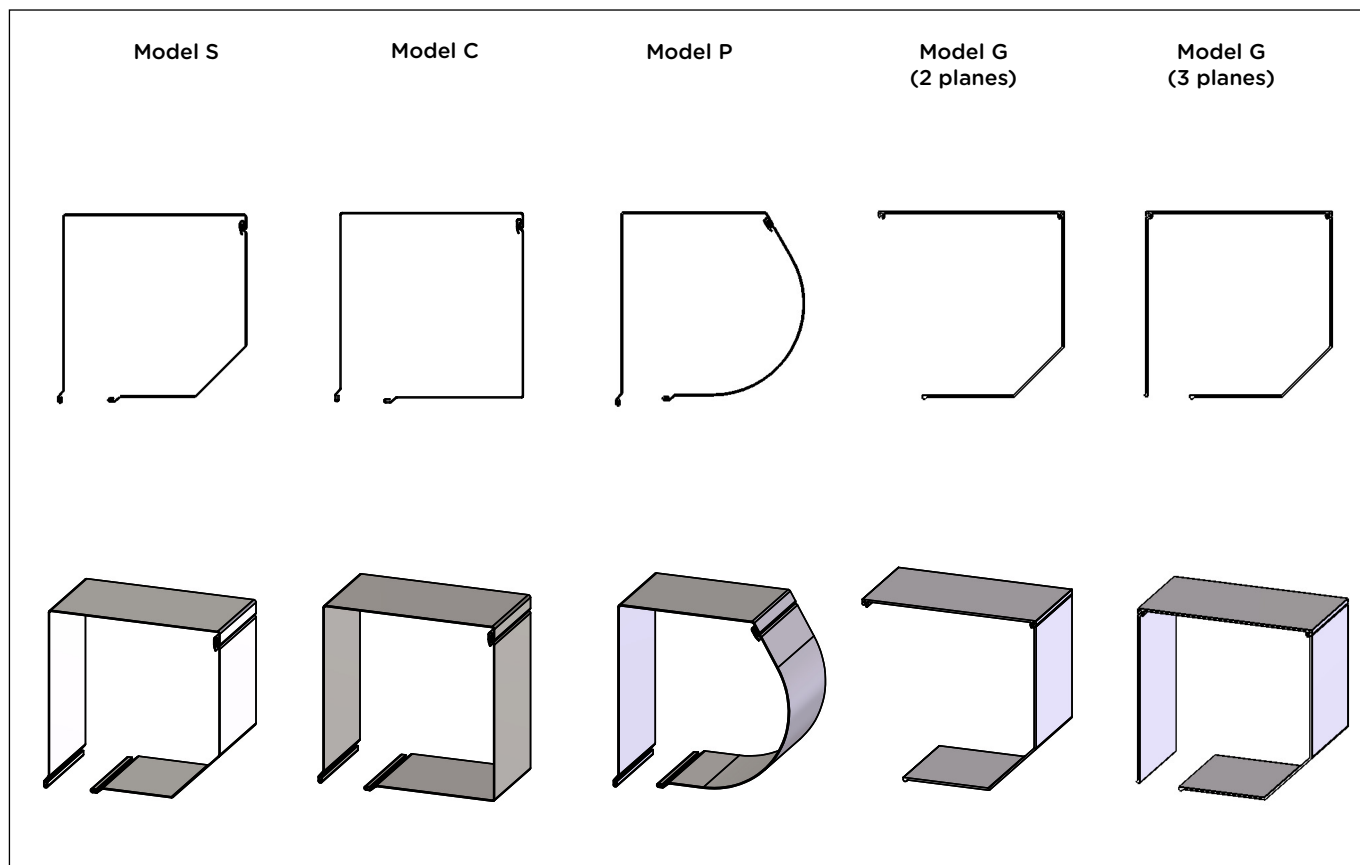
- Rounded inspection cover.
- Aluminium strip, profiled and folded.
- Only available for box sizes 150, 165, 180 and 205.

– **Model 'C':**

- 90° inspection cover.
- Aluminium strip, profiled and folded.
- Available for box sizes 150, 165, 180 en 205.

– **Model 'G':**

- Bevelled inspection cover.
- Extruded aluminium, thickness 2 mm.
- Only available for box sizes 165, 180 and 205.
- Choice of 2 or 3-plane extruded box.
- Included in the security package.



**Figure 3:**  
**Box models**

**Colours:** see price list.

**Minimum box size:** see roll-up tables (larger box size possible at additional cost).

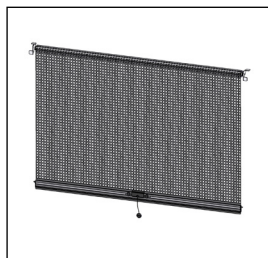
#### 4. THE ROLL-UP TABLES

**Table 1: Roll-up table: suspending springs (tape, crank, coiled spring, motors: LT, LS, Altus and Solus).**


| SLAT TYPE | TYPE OF AXLE | TAPE, CRANK, COILED SPRING, LT, LS, ALTUS AND SOLUS |      |      |      |      |      |
|-----------|--------------|-----------------------------------------------------|------|------|------|------|------|
|           |              | 137                                                 | 150  | 165  | 180  | 205  | 230  |
| PVC37     | 40           | 1500                                                | 2000 | 2400 | 2400 | 2400 | 2400 |
|           | 60           | 1300                                                | 1700 | 2400 | 2400 | 2400 | 2400 |
| MIDI      | 40           | 950                                                 | 1400 | 1800 | 2000 | 2900 | 3000 |
|           | 60           | 800                                                 | 1200 | 1600 | 2200 | 2900 | 3000 |
| ALU237    | 40           | 1600                                                | 1860 | 2640 | 3000 | 3000 | 3000 |
|           | 60           | 1340                                                | 1710 | 2520 | 3000 | 3000 | 3000 |
| ALU242    | 40           | 1010                                                | 1350 | 2020 | 2200 | 3000 | 3000 |
|           | 60           | 1050                                                | 1470 | 1890 | 2100 | 2940 | 3000 |
| ALU242S   | 40           | 1010                                                | 1350 | 2020 | 2200 | 3000 | 3000 |
|           | 60           | 1050                                                | 1470 | 1890 | 2100 | 2940 | 3000 |

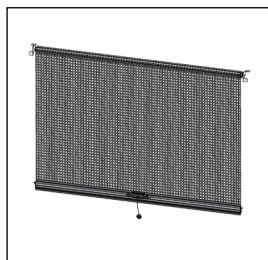
**Table 2: Roll-up table: switches (Ilmo motor, Oximo, Silensio RS100 IO and Becker motors).**


| SLAT TYPE | TYPE OF AXLE | ILMO MOTOR, OXIMO, SILENSIO RS100 IO, BECKER |      |      |      |      |      |
|-----------|--------------|----------------------------------------------|------|------|------|------|------|
|           |              | 137                                          | 150  | 165  | 180  | 205  | 230  |
| PVC37     |              |                                              |      |      |      |      |      |
|           | 60           | 1600                                         | 2000 | 2400 | 2400 | 2400 | 2400 |
| MIDI      |              |                                              |      |      |      |      |      |
|           | 60           | 1130                                         | 1340 | 1770 | 2200 | 3000 | 3000 |
| ALU237    |              |                                              |      |      |      |      |      |
|           | 60           | 1400                                         | 1730 | 2520 | 3000 | 3000 | 3000 |
| ALU242    |              |                                              |      |      |      |      |      |
|           | 60           | 1100                                         | 1370 | 1870 | 2140 | 3000 | 3000 |
| ALU242S   |              |                                              |      |      |      |      |      |
|           | 60           | 1100                                         | 1370 | 1870 | 2140 | 3000 | 3000 |

**Table 3: Roll-up table: with INSECT SCREEN**


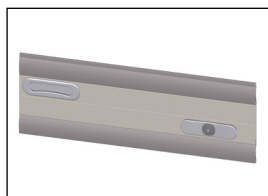
| SLAT TYPE | TYPE OF AXLE | INSECT SCREEN AND TAPE, CRANK, COILED SPRING, MOTORS: LT, LS, ALTUS AND SOLUS |      |      | INSECT SCREEN AND ILMO MOTOR, MOTORS: OXIMO, SILENSIO RS100 IO, BECKER |      |      |
|-----------|--------------|-------------------------------------------------------------------------------|------|------|------------------------------------------------------------------------|------|------|
|           |              | 165                                                                           | 180  | 205  | 165                                                                    | 180  | 205  |
| PVC37     | 40           | 1500                                                                          | 2000 | 2300 | 1700                                                                   | 2100 | 2300 |
|           | 60           | 1300                                                                          | 1700 | 2300 | 1600                                                                   | 2000 | 2300 |
| MIDI      | 40           | 950                                                                           | 1400 | 2000 | 1200                                                                   | 1500 | 2200 |
|           | 60           | 800                                                                           | 1200 | 2200 | 1130                                                                   | 1340 | 2200 |
| ALU237    | 40           | 1600                                                                          | 1860 | 2300 | 1500                                                                   | 1900 | 2300 |
|           | 60           | 1340                                                                          | 1710 | 2300 | 1400                                                                   | 1730 | 2300 |
| ALU242    | 40           | 1010                                                                          | 1350 | 2300 | 1150                                                                   | 1530 | 2300 |
|           | 60           | 1050                                                                          | 1470 | 2300 | 1110                                                                   | 1370 | 2300 |
| ALU242S   | 40           | 1010                                                                          | 1350 | 2300 | 1150                                                                   | 1530 | 2300 |
|           | 60           | 1050                                                                          | 1470 | 2300 | 1110                                                                   | 1370 | 2300 |

**Table 4: Roll-up table: with INSECT SCREEN: intermediate slat and DVA**



| SLAT TYPE | TYPE OF AXLE | INSECT SCREEN & INTERMEDIATE SLAT |      |      | INSECT SCREEN & DVA |      |      |
|-----------|--------------|-----------------------------------|------|------|---------------------|------|------|
|           |              | 165                               | 180  | 205  | 165                 | 180  | 205  |
| PVC37     | 40           | 1200                              | 1700 | 2300 | 1250                | 1900 | 2300 |
|           | 60           | 1100                              | 1700 | 2300 | 1050                | 1650 | 2300 |
| MIDI      | 40           | 700                               | 1050 | 1800 | 600                 | 1200 | 2100 |
|           | 60           | 550                               | 1000 | 1850 | 650                 | 1050 | 1900 |
| ALU237    | 40           | 1500                              | 1660 | 2300 | 1300                | 1770 | 2300 |
|           | 60           | 1240                              | 1510 | 2300 | 950                 | 1450 | 2300 |
| ALU242    | 40           | 910                               | 1150 | 2080 | 980                 | 1200 | 2050 |
|           | 60           | 950                               | 1270 | 1960 | 520                 | 980  | 1840 |
| ALU242S   | 40           | 910                               | 1150 | 2080 | 980                 | 1200 | 2050 |
|           | 60           | 950                               | 1270 | 1960 | 520                 | 980  | 1840 |

**Table 5: Roll-up table: with intermediate slat**



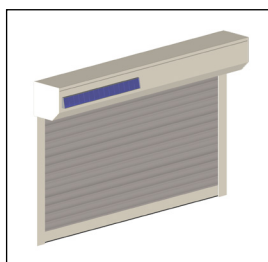
| SLAT TYPE | TYPE OF AXLE | WITH INTERMEDIATE SLAT |      |      |      |      |      |
|-----------|--------------|------------------------|------|------|------|------|------|
|           |              | 137                    | 150  | 165  | 180  | 205  | 230  |
| PVC37     | 40           | 1200                   | 1700 | 2100 | 2400 | 2400 | 2400 |
|           | 60           | 1100                   | 1700 | 2150 | 2400 | 2400 | 2400 |
| MIDI      | 40           | 700                    | 1050 | 1400 | 1800 | 2700 | 3000 |
|           | 60           | 550                    | 1000 | 1200 | 1850 | 2450 | 3000 |
| ALU237    | 40           | 1500                   | 1660 | 2340 | 2600 | 3000 | 3000 |
|           | 60           | 1240                   | 1510 | 2220 | 2600 | 3000 | 3000 |
| ALU242    | 40           | 910                    | 1150 | 1720 | 2080 | 2600 | 3000 |
|           | 60           | 950                    | 1270 | 1590 | 1960 | 2440 | 3000 |
| ALU242S   | 40           | 910                    | 1150 | 1720 | 1800 | 2600 | 3000 |
|           | 60           | 950                    | 1270 | 1590 | 1700 | 2440 | 3000 |

**Table 6: Roll-up table: with DVA**



| SLAT TYPE | TYPE OF AXLE | DVA  |      |      |      |      |      |
|-----------|--------------|------|------|------|------|------|------|
|           |              | 137  | 150  | 165  | 180  | 205  | 230  |
| PVC37     | 40           | 1250 | 1900 | 2350 | 2400 | 2400 | 2400 |
|           | 60           | 1050 | 1650 | 2100 | 2400 | 2400 | 2400 |
| MIDI      | 40           | 600  | 1200 | 1650 | 2100 | 2650 | 3000 |
|           | 60           | 650  | 1050 | 1500 | 1900 | 2800 | 3000 |
| ALU237    | 40           | 1300 | 1770 | 2290 | 2900 | 3000 | 3000 |
|           | 60           | 950  | 1450 | 2000 | 2500 | 3000 | 3000 |
| ALU242    | 40           | 980  | 1200 | 1600 | 2050 | 3000 | 3000 |
|           | 60           | 520  | 980  | 1350 | 1840 | 2860 | 3000 |
| ALU242S   | 40           | 980  | 1200 | 1600 | 2050 | 3000 | 3000 |
|           | 60           | 520  | 980  | 1350 | 1840 | 2860 | 3000 |

Table 7: Roll-up table: SOLAR roller shutter



| SLAT TYPE | TYPE OF AXLE | SOLAR ROLLER SHUTTER |      |      |      |      |      |
|-----------|--------------|----------------------|------|------|------|------|------|
|           |              | 137                  | 150  | 165  | 180  | 205  | 230  |
| PVC37     | 60           | 1060                 | 1700 | 2400 | 2400 | 2400 | 2400 |
| MIDI      | 60           | 800                  | 1200 | 1700 | 2040 | 2900 | 3000 |
| ALU237    | 60           | 1100                 | 1630 | 2520 | 3000 | 3000 | 3000 |
| ALU242    | 60           | 560                  | 1270 | 1870 | 2140 | 3000 | 3000 |
| ALU242S   | 60           | 560                  | 1270 | 1870 | 2140 | 3000 | 3000 |

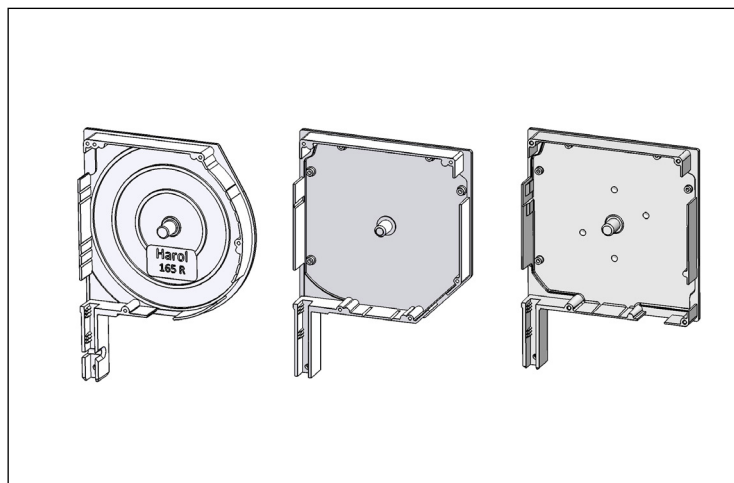
## 5. THE CONSOLES

**Material:** aluminium

**Colours:** always the same as the box colour.

**Types:**

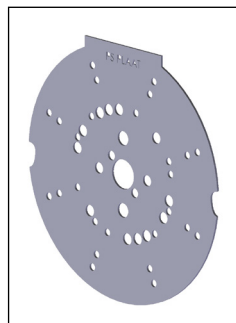
- Console 'S' for boxes with bevelled inspection covers (model 'S' and model 'G' boxes).
- Console 'P' for boxes with rounded inspection covers (model 'P' box).
- Console 'C' for boxes with 90° inspection covers (model 'C' box).



**Supporting plate** for mounting the motor, gearbox or coiled spring.

- Electrolytically galvanised.
- One plate per console size, applicable in both models S, P and C.

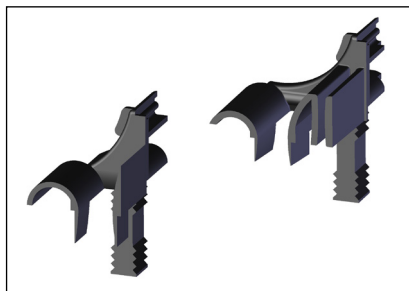
**Figure 4:**  
Console S, console P  
and console C



**Figure 5:**  
Supporting plate

**Entry guides:**

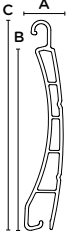
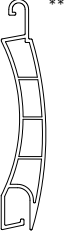
- Provides quiet entry.
- In combination with the bottom lath stops, constitutes a fixed touch for the bottom lath in the upper position.
- Is anchored in the pivot for the console.
- Has a low tape exit.
- 2 types: the ordinary entry guide and the insect screen entry guide.



**Figure 6:**  
**The entry guide and**  
**insect screen entry**  
**guide**

**6. THE CURTAIN**
**Slats:**

- Types: PVC37, MIDI, ALU237, ALU242, ALU242S.

|                                                  |  |  |  |  |  |
|--------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                  | PVC37                                                                              | MIDI                                                                               | ALU237                                                                             | ALU242                                                                             | ALU242S                                                                              |
| slat thickness (A) (mm)                          | 7,8                                                                                | 9                                                                                  | 7,8                                                                                | 9,3                                                                                | 9,3                                                                                  |
| covering height (B) (mm)                         | 37,1                                                                               | 38,5                                                                               | 37,0                                                                               | 42,0                                                                               | 42,0                                                                                 |
| total height (C) (mm)                            | 43,2                                                                               | 46,5                                                                               | 42,7                                                                               | 48,8                                                                               | 48,8                                                                                 |
| number of slats per metre of height              | 27                                                                                 | 26                                                                                 | 27                                                                                 | 23,8                                                                               | 23,8                                                                                 |
| net weight (kg/m <sup>2</sup> )                  | 2,86                                                                               | 3,5                                                                                | 2,80                                                                               | 2,85                                                                               | 4,32                                                                                 |
| gross weight (kg/m <sup>2</sup> )                | 3,71                                                                               | 4,55                                                                               | 3,64                                                                               | 3,705                                                                              | 5,616                                                                                |
| maximum width (mm)                               | 1600                                                                               | 2400                                                                               | 3000                                                                               | 4000                                                                               | 4000                                                                                 |
| maximum height (mm)                              | 2400                                                                               | 3000**                                                                             | 3000                                                                               | 3000                                                                               | 3000                                                                                 |
| maximum area (m <sup>2</sup> )                   | 3                                                                                  | 5                                                                                  | 7                                                                                  | 9                                                                                  | 10                                                                                   |
| weerstandswaarde $\Delta R$ (m <sup>2</sup> K/W) | 0,19                                                                               | 0,21                                                                               | 0,16                                                                               | 0,16                                                                               | 0,16                                                                                 |
| weerstandswaarde $R_{SH}$ (m <sup>2</sup> K/W)   | 0,065                                                                              | 0,088                                                                              | 0,03                                                                               | 0,03                                                                               | 0,03                                                                                 |

\*The ALU242S has harder foam, which makes it suitable for use as a security slat (included in the security package).

\*\*MIDI: if  $B > 2000 \rightarrow H_{max} = 2000$

**Table 8: slat details**

**Material:**

- PVC37 and MIDI: double-walled plastic.
- ALU237, ALU242 and ALU242S\*: double-walled, foam-insulated aluminium.

**Colour tables:**

|                         | PVC   |      |
|-------------------------|-------|------|
|                         | PVC37 | MIDI |
| RAL 9016 (white)        | x     | x    |
| Harol grey              | x     | x    |
| Harol beige             | x     | x    |
| RAL 9001 (creamy white) | x     | x    |

**Table 9: PVC colour chart**

|                      |                    | RAL    | CODE | STANDARD ALU-SLATS |        |         |
|----------------------|--------------------|--------|------|--------------------|--------|---------|
|                      |                    |        |      | ALU237             | ALU242 | ALU242S |
| STANDARD COLOURS     | white              | ±9016  | 01   | x                  | x      | x       |
|                      | brown              | ±8028  | 03   | x                  | x      | x       |
|                      | Alu-metallic       | ±9006  | 07   | x                  | x      | x       |
|                      | light grey         | ±7038  | 23   | x                  | x      |         |
|                      | White cream        | ±9001  | 27   | x                  | x      | x       |
|                      | anthracite grey    | ±7016  | 38   | x                  | x      |         |
|                      | quartz grey        | ±7039  | 43   | x                  | x      |         |
|                      | aluminum grey      | ±9007  | 85   | x                  | x      |         |
|                      | black              | ±9005  | 90   | x                  | x      |         |
| SUPPLEMENTAL COLOURS | low gray           | ±7035  | 02   | x                  | x      | x       |
|                      | light beige        | ±1013  | 04   | x                  | x      | x       |
|                      | dark beige         |        | 05   | x                  |        |         |
|                      | Bronze             |        | 09   | x                  |        |         |
|                      | oak                |        | 11   | x                  |        |         |
|                      | teak               |        | 12   | x                  | x      |         |
|                      | moss-green         | ±6005  | 13   | x                  | x      |         |
|                      | purple red         | ±3004  | 14   | x                  | x      |         |
|                      | metallic dark grey | ±9009  | 18   | x                  | x      |         |
|                      | golden oak         |        | 22   | x                  | x      |         |
|                      | pine green         | ± 6009 | 28   |                    | x      |         |
|                      | grey brown         | ±8019  | 30   |                    | x      |         |
|                      | velvet grey        | ±7047  | 37   | x                  |        |         |
|                      | steel blue         | ±5011  | 39   |                    | x      |         |
|                      | basalt grey        | ±7012  | 44   | x                  | x      |         |
|                      | concrete grey      | ±7023  | 45   | x                  |        |         |
|                      | black grey         | ±7021  | 46   | x                  | x      |         |
|                      | santiago grey      | ±9018  | 62   |                    |        |         |
|                      | cream              | ±1015  | 84   | x                  | x      |         |
|                      | walnut             |        | 86   | x                  |        |         |
|                      | black sablé        | ±2100  | 95   | x                  |        |         |

**Table 10: ALU colour chart**

**Figure 7: Slats**
**Light and ventilation slot options:**

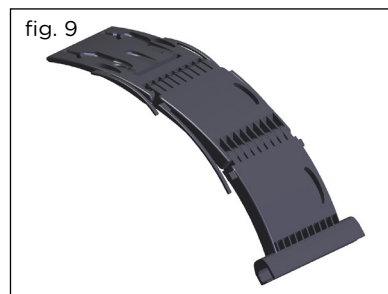
- Without light (code 0).
- 1/3 light (code 1).
- 1/2 light (code 2).
- 2/3 light (code 3).
- 1/1 light (code 4) (7 solid slats at the top, the remainder with light and ventilation slots). The slats with light and ventilation slots are always at the bottom.
- Reflection of small traces of light between closed light slats

or between curtain and guide rail are typical properties of the product and cannot be excluded. If the roller shutter is needed for a complete blackout, it is best not to choose light slats.

## Fixation to the axle:

- Electric operation with Ilmo motor, Oximo IO (Standard) and Silensio RS100 IO or Becker: rod shackles.
  - The rod shackles standard equipped with a protective felt cover (function: reduces the marking of the shackles on the slats).
- Coiled spring operation: directly onto the axle.
- All other operations: using felted suspending springs (3 per meter of width).
  - 2 types: - Suspending spring 13.6 cm (for box 137 to 165).
  - Suspending spring 17.4 cm (for box 180 to 230).

**Figure 8:**  
**Suspending spring**  
**Figure 9:**  
**Rod shackle**



## 7. THE BOTTOM LATH

**Material:** extruded aluminium.

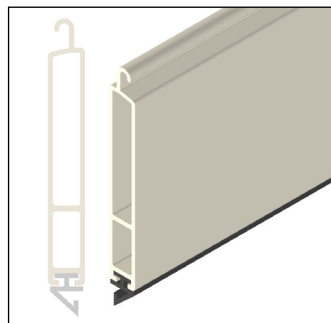
**Colour:** the bottom lath comes standard in the same colour as the box.

**2 types:** depending on the slat type.

### Properties:

- Sound-insulating when closing.
- Wind and rain sealer.
- Always equipped with a rubber seal.

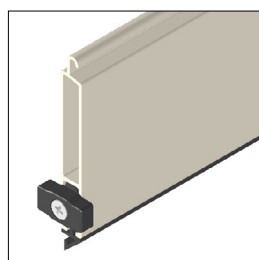
**Figure 10:**  
**Bottom lath with rubber**



### Standard:

- Bottom lath stops can be rotated:
  - Stops in the entry guide.
  - Are not used with coiled-spring models or Somfy LT motors.

**Figure 11:**  
**Rotatable bottom lath stop**



### Option A1653: not-rotatable bottom lath stop:

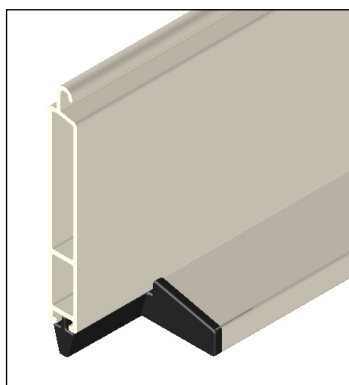
- functionally this is the same as the rotatable lath stop

### ATTENTION! when laths are revised, one must:

- either be able to take the shutter box off its guides
- or destructively remove the non-rotatable lath stop

## Options:

- Safety bottom lath: closed by a specially formed profile section for additional reinforcement. Included in the security package.



**Figure 12:**  
**Security bottom lath**

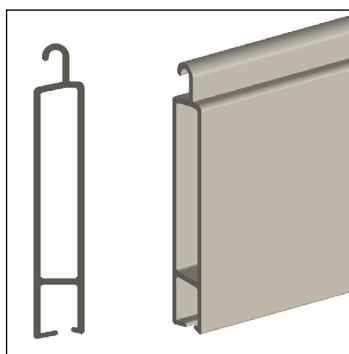
## 8. THE INTERMEDIATE SLAT

**Material:** extruded aluminium.

**Colour:** the intermediate slat comes standard in the same colour as the bottom lath.

**2 types:** depending on the slat type.

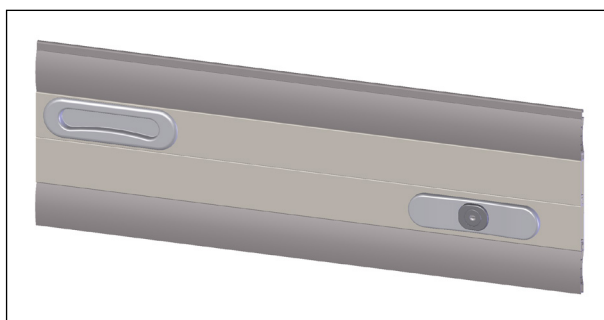
**Standard:** at hand height (approx. 800 mm).



**Figure 13:**  
**The intermediate slat**

**Application:** as a roller shutter slat for fitting the following accessories:

- Cylinder lock
- Handgrips



**Figure 14:**  
**Cylinder lock and  
built-in handgrip**

## 9. THE GUIDE RAILS

**Material:** extruded aluminium.

**Colour:** standard colour the same as the box.

**Types:** choice of several different types (see Figure 16).

**Standard:**

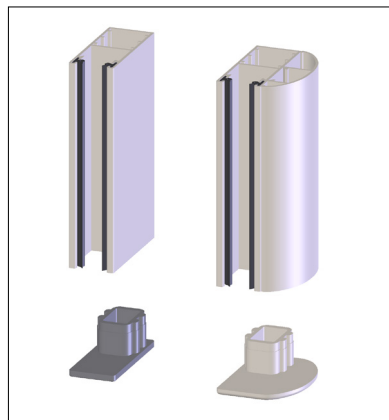
- Fitted with EPDM seals:
  - Low-noise operation.
  - Sound dampening under high-wind conditions.
  - Depending on the type of slat, a custom seal is run through the guide rail.

**Application:**

- 120 and 121 as central guide for DVC.
- 118D for DVC in combination with the 118S guide rail.
- H118 and H128 for use with insect screens.
- Guide rail 135: due to the heavier version (thickness: 2.35 mm) suitable as security guide rail (is part of the safety package). Can only be selected if all guide rails for the roller shutter are type 135.

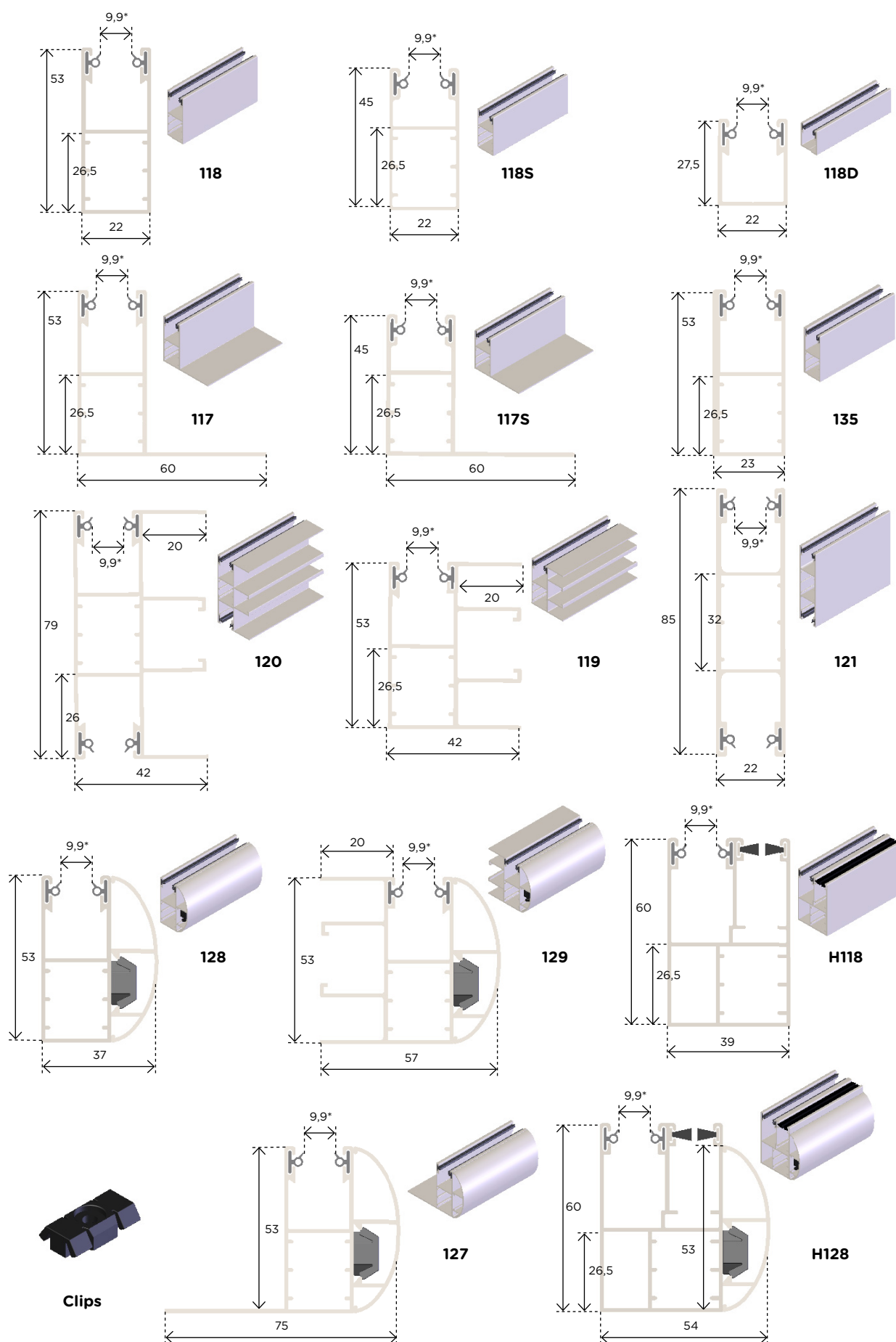
**Optional:**

- A66 — Cover caps for guide rails:
  - Guide rails 117, 118, 119 en 135: cover caps in black PVC.
  - Guide rails 127, 128 en 129: cover caps in aluminium.



**Figure 15:**  
**Cover caps**

- A72 — Extra length guides
- Guides predrilled:
  - A168 — to the left/right ⇌ (118/117/118S/117S/128/127/118D)
  - A167 — to the back ⇐ (118/118S/128/118D)



**Figure 16:**

**Guide rail types**

\* With narrow slats this opening is 9.2 mm

### Option A1614: Additional brush seal for guides (self-adhesive)

**Purpose:** reduces noise and light transmission through the guides.



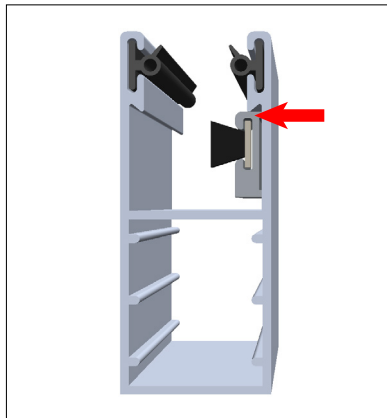
#### Please note!

- cannot be used with the rotatable bottom lath stop (unless in vertical position)
- motor must be manually adjusted or bottom lath stops on the bottom lath
- tape, crank & coiled spring are mandatory with bottom lath stops on the bottom lath

**Restriction:** cannot be used on narrow guides

#### Installation:

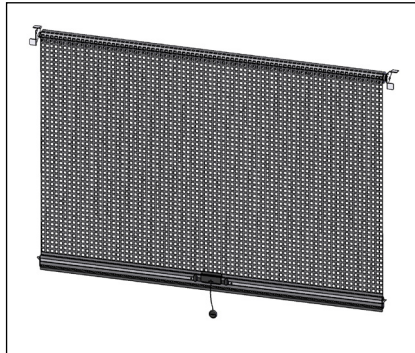
- to be fitted across the entire guide length
- to be fitted on the window side
- with the thin leg up against the joint (red arrow)
- self-adhesive



**Figure 17:**  
**TAR1614: Additional**  
**brush seal for guides**  
**(self-adhesive)**

## 10. THE INSECT SCREEN

A built-in insect screen can be optionally included with the VR150.



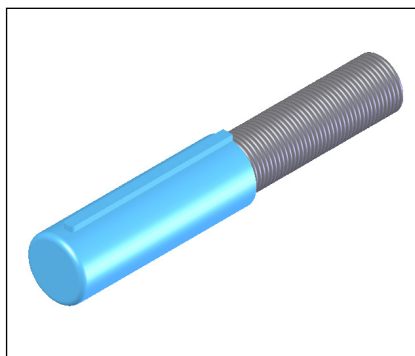
**Figure 18:**  
*The insect screen*

### Features:

- Easy-running coiled-spring axle for smooth operation.
- Maximum sizes:
  - Maximum width: 1500 mm
  - Maximum height: 2300 mm
- Minimum width: 650 mm
- Can only be selected:
  - With box sizes 165, 180 and 205.
  - In combination with guide rail H118 or H128 (note: guide rail for insect screen can only be selected if all guide rails are for insect screens).
- Separate roll-up tables (see pages 7 and 8).
- For DVC or DVS, this option must be specified per section. They are thus priced by section as well.
- The bottom lath of the insect screen has the same colour as the bottom lath of the curtain. No other option is available.
- Guarantee: 2 years.
- Restrictions:
  - This option is not available if curtain option A15 (angled profile on bottom lath) is selected.
  - This option is not available in combination with a curtain with coiled-spring operation.

### Options:

- Hydraulic brake for insect screen: ensures gentle roll-up of the insect screen.
- Minimum width of insect screen with hydraulic brake: 750 mm.



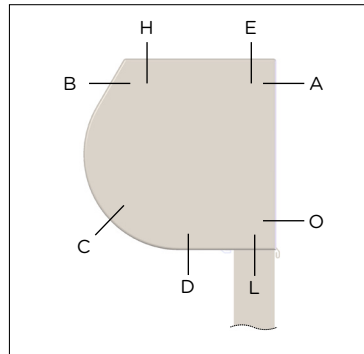
**Figure 19:**  
*Insect screen brake*

## 11. OPERATION

The operating mechanisms are fitted blind (no screws visible):

- Tape and cord operation: confirmation directly to the pivot for the console.
- Other operations: attached to a supporting plate (see page 9: Consoles).

The operating side is always stated as viewed from the inside.



**Figure 20:**  
**Operating exits**

### 11.1 Tape

#### Features:

- Minimum width: 300 mm.
- 14 mm tape.
- Tape operation is possible up to a gross curtain weight of 15 kg.
- Tape length:
  - For standard tape:  $2 \times \text{height} + 1500 \text{ mm}$ .
  - Acceleration 2/1:  $3 \times \text{height} + 1500 \text{ mm}$ .
  - Acceleration 3/1:  $5 \times \text{height} + 1500 \text{ mm}$ .
- Box dimensions 137 and 230 are impossible in case of exterior operation

| TAPE BOX | TYPE     | NORMAL<br>1:1 | REDUCTION<br>2:1 | REDUCTION<br>3:1 |
|----------|----------|---------------|------------------|------------------|
| 4 m      | built-on | 2300          | 1300             | /                |
| 9 m      | built-on | 3000          | 3000             | 1900             |
| 11 m     | built-on | /             | /                | 2400             |
| 5 m      | built-in | 2700          | 1800             | 800              |

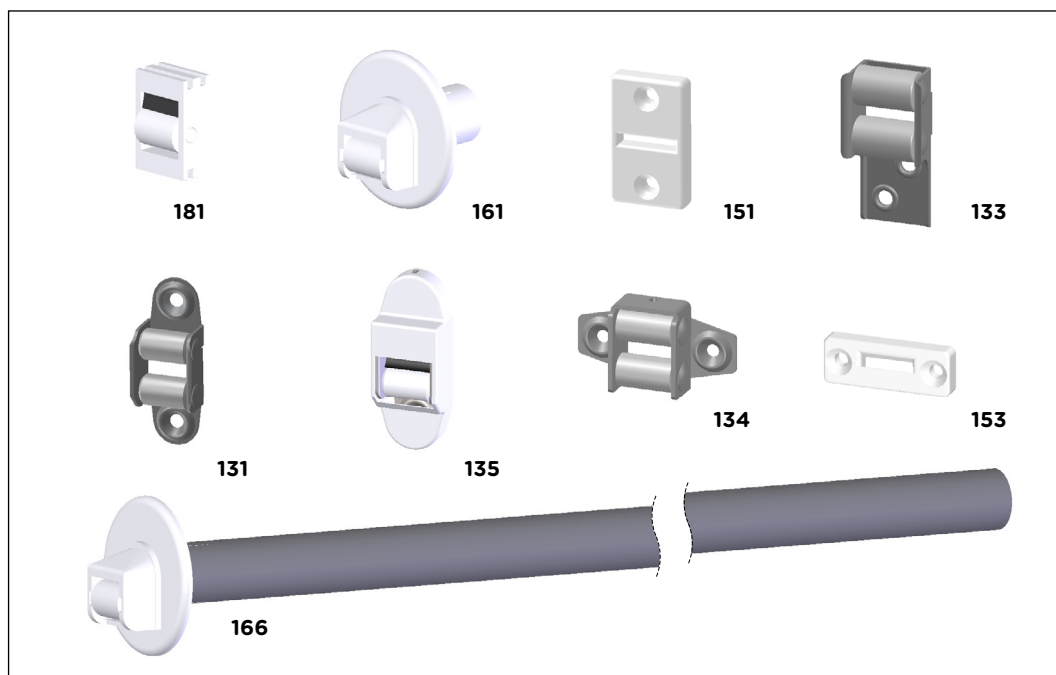
**Table 11: Maximum height (in mm) of the roller shutter per type of tape coiler.**

#### Standard:

- Type 135 tape guide for type 1 and 2 mounting.
- Type 166 tape guide for type 3 and 5 mounting and exit O.
- Built-on tape coiler.
- Tape colour depends on box colour:
  - Brown tape with a brown tape coiler is supplied as standard for RAL 8019, RAL 6009, RAL 3005 and RAL 5011.
  - Grey tape with a white tape coiler is supplied as standard for all other colours.

#### Options:

- 2/1 acceleration
- 3/1 acceleration
- TOH: tape on handle (maximum height: 3000 mm).
- Built-in tape coiler instead of built-on tape coiler (option A78).
- Tape and tape coiler colours can be selected by the customer.
- Choice of various tape guides (see Figure 21).

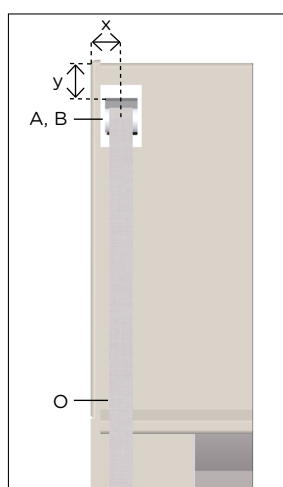


**Figure 21:**  
**Table of tape guides**

**Operating exits** (see Figure 20).

- Assembly type 1: B, C, D.
- Assembly type 2, 3 or 5: A, O.

Note: type A exit is not possible in combination with an insect screen.



| Exit    | X  | Y  |
|---------|----|----|
| A and B | 15 | 23 |
| O       | 15 | 15 |

**Figure 22:**  
**Tape exit dimensions**

## 11.2 Cord

### Features:

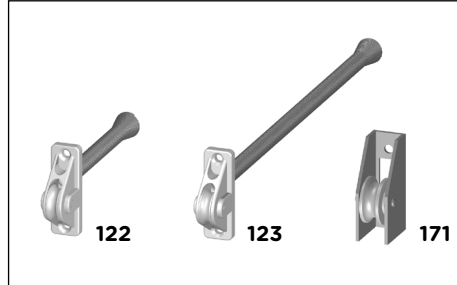
- Minimum width: 300 mm.
- Cord diameter 4.5 mm.
- Cord operation is possible up to a maximum gross curtain weight of 15 kg.
- Cord length:  $2 \times \text{height} + 1500 \text{ mm}$ .

### Standard:

- Rope guide 122 (see Figure 23): length 10 cm.
- Built-on tape coiler: model 3.5 m (maximum height: 1800 mm).
- Cord colour depends on box colour:
  - Brown rope with a brown tape coiler is supplied as standard for RAL 8019, RAL 6009, RAL 3005 and RAL 5011.
  - White rope with a white tape coiler is supplied as standard for all other colours.

**Options:**

- COH: cord on handle (maximum height: 3000 mm).
- Cord and tape coiler colours can be selected by the customer.
- Rope guide 123 (see Figure 23): length 25 cm, not available in brown.
- Type 171 rope guide (see Figure 23).



**Figure 23:**  
**Types of rope guides**

### 11.3 Crank handle operation

**Features:**

- Minimum width: 300 mm.
- Self-braking worm-worm gear mechanism with 1/7 transmission ratio.
- With auxiliary spring operating system for large dimensions (results in increased axle diameter).
- Box dimensions 137 and 230 are impossible in case of exterior operation.

**Standard:**

- Cardan joint:
  - 7 mm hexagonal.
  - Length: 500 mm.
  - 45° or 90° depending on the exit.
- Winch handle
  - Grey
  - Not detachable.
  - Length: see table.

| ROLLER SHUTTER HEIGHT | CRANK LENGTH |
|-----------------------|--------------|
| $0 < H \leq 1800$     | 1500         |
| $1800 < H \leq 2050$  | 1800         |
| $2050 < H$            | 2500         |

**Table 12: length of winch handle.**

**Options:**

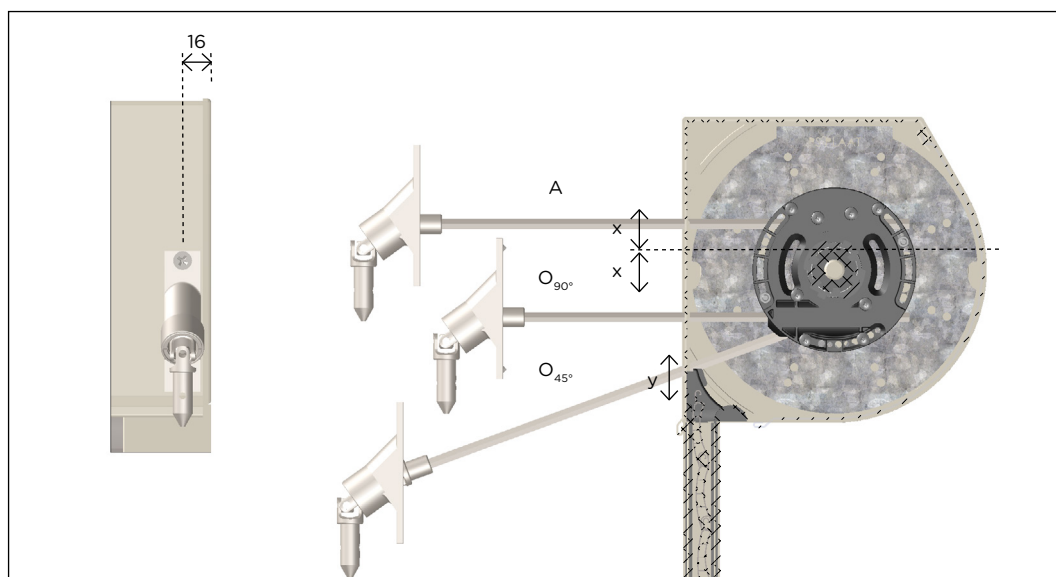
- Cardan joint 45° instead of 90° for exit 'O' (option A473).
- White crank instead of grey.
- Winch handle with different length from standard (available lengths: 1500, 1800 and 2500 mm).
- Detachable crank.

**Operating exits:** (see Figure 19)

- Assembly type 1: B\*, C\* or D.
  - Exit 'C' and 'D' = cardan joint 45° (note: exit 'C' only from box size 150).
  - Exit 'A' and 'B' = cardan joint 90°.
  - Exit 'O' = cardan joint 90° with possibility to choose cardan joint 45° via option A473.

\* Note: with model 'P', the cardan joint cannot be mounted against the cover.

**Figure 24:**  
**Dimensions for crank**  
**operating exits**

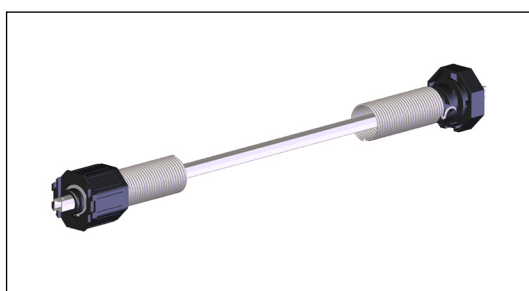


| EXIT       | DISTANCE                  |
|------------|---------------------------|
| A or O 90° | X = 40 mm with art. 17880 |
| A or O 90° | X = 30 mm with art. 39624 |
| O 45°      | Y = 46 mm                 |

**Table 13: exit crank handle operation**

#### 11.4 The coiled spring

**Figure 25:**  
**Coiled spring**



##### Features:

- Minimum width: 790 mm.
- Coiled-spring operation is possible up to a maximum torque of 17.65 Nm.
- Must always be used in combination with a locking device.
- Only possible with curtains without light and ventilation slots (light code = 0).
- Pull rod and orbit standard for guide rail length greater than 2100 mm.
- Pull rod length:
  - If guide rail length  $\leq 2800$  mm: pull rod of 740 mm.
  - If guide rail length  $> 2800$  mm: pull rod of 1200 mm.
- Fitted standard with 4 built-on handgrips on the bottom lath. If an intermediate slat with built-in handgrips is selected, two bottom lath stops are fitted to the bottom lath.

##### Options:

- Pull rod and orbit for guide rail length  $\leq 2100$  mm (option A116).
- Coiled spring without locking device (option A1104).

### 11.5 Motor

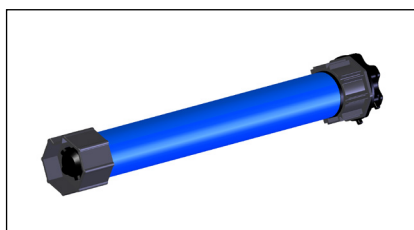


Figure 26:  
Tubular motor

|                               | ILMO WT   | ILMO S WT | BECKER R | OXIMO WT | LS40   | LT50 | RDO50 CSI <sup>2</sup> | OXIMO IO <sup>1</sup> | OXIMO S AUTO IO <sup>2</sup> | ALTUS 50 IO | OXIMO 40 IO | SILENSIO RS100 IO | RS100 SOLAR IO | HAROL PRIMO | HAROL SECURE | HAROL SOLAR PURE |
|-------------------------------|-----------|-----------|----------|----------|--------|------|------------------------|-----------------------|------------------------------|-------------|-------------|-------------------|----------------|-------------|--------------|------------------|
| AXLE                          | 60        | 60        | 60       | 60       | 40     | 60   | 60                     | 60                    | 60                           | 60          | 40          | 60                | 60             | 60          | 60           | 60               |
| MINIMUM WIDTH                 | 720       | 580       | 710      | 820      | 610    | 720  | 815                    | 820                   | 580                          | 820         | 630         | 680               | 650            | 790         | 790          | 865              |
| MAXIMUM TORQUE                | 35        | 6         | 20       | 40       | 9      | 50   | 40                     | 40                    | 6                            | 50          | 13          | 20                | 20             | 30          | 30           | 20               |
| OPERATION                     | switch    |           |          |          |        |      |                        | transmitter           |                              |             |             |                   |                | switch.     | transmitter  |                  |
| NHB                           |           |           |          |          |        |      | X                      |                       |                              |             |             |                   |                |             |              |                  |
| END POSITIONS                 | automatic |           |          | set      | button |      |                        | transmitter           |                              |             |             |                   |                | set         | transmitter  |                  |
| HHO <sup>3</sup>              | x         | x         | x        | x        |        |      |                        | x                     | x                            |             | x           | x                 | x              | x           | x            | x                |
| HHN <sup>4</sup>              | x         | x         | x        | x        |        |      |                        | x                     | x                            |             | x           | x                 | x              | x           | x            | x                |
| ABS POSSIBLE <sup>5</sup>     |           |           |          |          |        | x    | x                      |                       |                              |             |             |                   |                |             |              |                  |
| CABLE LENGTH (m)              | 3         | 3         | 3        | 3        | 2,5    | 3    | 2,5                    | 5                     | 3                            | 5           | 3           | 5                 |                | 2,5         | 2,5          | 0,2              |
| TOUCH REQUIRED                | x         | x         | x        |          |        |      |                        |                       | x                            |             |             | x                 | x              |             |              |                  |
| OPTIONAL CABLE 5 M            | x         |           |          | x        |        | x    | x                      |                       |                              |             |             |                   |                | x           | x            | x                |
| OPTIONAL CABLE 10 M           | x         |           |          | x        |        | x    | x                      | x                     |                              | x           |             |                   |                |             |              |                  |
| IP CLASS                      |           |           |          |          |        |      |                        |                       |                              |             |             |                   |                | IP65        | IP65         | IP65             |
| RPM                           |           |           |          |          |        |      |                        |                       |                              |             |             |                   |                | 17          | 17           | 12               |
| OPTIONAL SECURITY BOTTOM LATH | x         | x         | x        | x        |        |      |                        | x                     | x                            |             | x           | x                 | x              | x           | x            | x                |

Table 14: motor details

<sup>1</sup> Standard motor.

<sup>2</sup> Minimum box size = 150.

<sup>3</sup> HHO = obstacle detection in the upward direction.

<sup>4</sup> HHN = obstacle detection in the downward direction.

<sup>5</sup> ABS = stops the downward movement of the curtain when the bottom lath hits an obstacle.

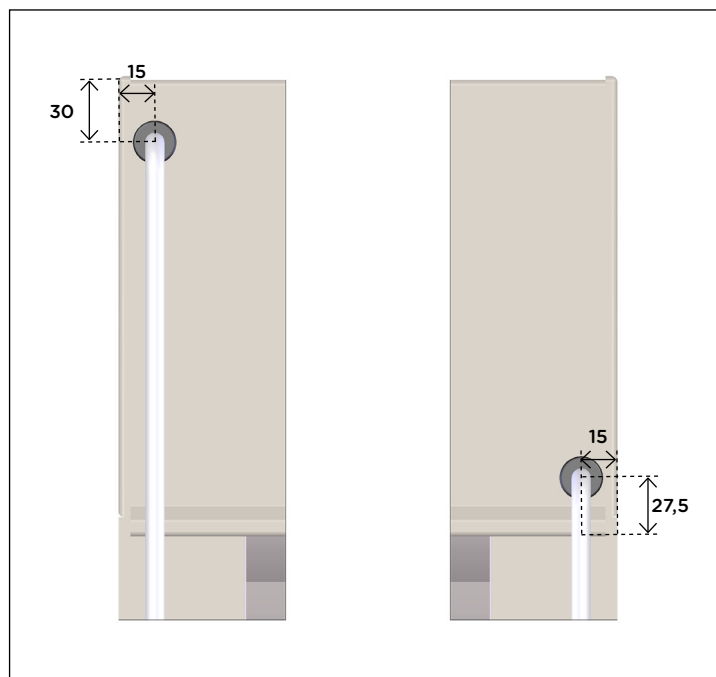
## Other options:

- Without switch.
- ABS (option A 37):
  - Security fitted in the axle: prevents damage to the shutter curtain if an obstacle is hit during downward movement.
  - Only available with LT50 and CSI motors.
  - Only available with motors with a maximum torque of 30 Nm.

## Operating exits: (see Figure 20)

- Motor: A, B, C, D, E, H, L, O.
- Emergency manual operation: A, B\*, C\*, D, O.
  - Exit 'C' and 'D' = cardan joint 45° (note: exit 'C' only from box size 150).
  - Exit 'A' and 'B' = cardan joint 90°.
  - Exit 'O' = cardan joint 90° with possibility to choose cardan joint 45° via option A473.

\* Note: with model 'P', the cardan joint cannot be mounted against the cover.



**Figure 27:**  
**Motor cable exit**

### 11.6 Somfy Solar motor

This is a self-contained solar-powered system with all the advantages of an RS100 Silensio motor (IO).

- Option numbers: 4118 RS100 Solar IO (6/10Nm) or A4119 RS100 Solar IO (15/20Nm)
- The solar panel can be fitted to the 3 different S, P or C box types (it is recommended to fit the solar cells onto a 45° or 90° box), but in the P 137-180 enclosures, no motor of 15/20Nm or more can be installed due to the size of the solar panel
- Selecting solar will affect the roll-up diameter, as, by default, the battery is fitted inside the box (with the smallest boxes affected most)
- Combination of insect screen and solar panel: only with external batterie! (A4116)
- The panel is always on the same side as the motor
- 1 panel is always installed, irrespective of the shutter orientation.
- Solar-powered motors have a restricted number of cycles when mounted on the north-facing (shaded) side.

Possible options:

- A4116 external battery supplied separately (length of the cable max. 10 cm).
- A1612/A4122 battery in aluminium casing supplied separately.
- A4117 solar panel supplied separately (standard with extension cable of 1 m) (Possible outputs for this cable: A-B-AZ-BZ- and X ).
- A1613 extension cable 5m for solar panel.
- art.066451 if a longer cable (1m) is required for an external battery.
- With a northern orientation, one cycle per day is guaranteed.
- Ensure that sunlight can reach the solar panel when installing the roller shutter!

**Figure 28:**  
Solar shutters



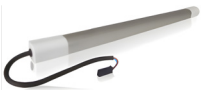
|                                                                                     |               | RS100 SOLAR IO 6/10NM<br>(A4118) | RS100 SOLAR IO<br>15/20NM (A4119) |
|-------------------------------------------------------------------------------------|---------------|----------------------------------|-----------------------------------|
| MOTOR                                                                               |               |                                  |                                   |
|  | type of motor | RS100 Silensio IO                | RS100 Silensio IO                 |
|                                                                                     | motor power   | 6 - 10Nm                         | 15 - 20Nm                         |
|                                                                                     | diameter      | Ø50                              | Ø50                               |
|                                                                                     | speed         | 6/15 10/12 rpm                   | 15/12 20/12 rpm                   |
| SOLAR PANEL                                                                         |               |                                  |                                   |
|  | panel type    | monocrystalline                  | monocrystalline                   |
|                                                                                     | power         | 2,5W                             | 5,8W                              |
|                                                                                     | dimensions    | 370x60x6mm                       | 500x90x6mm                        |
|                                                                                     | life time     | >20 years                        | >20 years                         |
| BATTERY                                                                             |               |                                  |                                   |
| standard                                                                            | battery type  | NiMH                             | NiMH                              |
|  | capacity      | 9,6V DC                          | 16,8V DC                          |
|                                                                                     | dimensions    | 340x23mm                         | 595x23mm                          |
|                                                                                     | cable length  | 10cm                             | 10cm                              |
| optional                                                                            | battery type  | NiMH                             | NiMH                              |
|  | capacity      | 9,6V DC                          | 16,8V DC                          |
|                                                                                     | dimensions    | 481x23mm                         | 736x23mm                          |
|                                                                                     | cable length  | 21cm                             | 21cm                              |

Table 15: main characteristics of Somfy solar motor components

**Note:**

- 7-year warranty on motor, solar panel and battery
- after purchase, the roller shutter must be installed within one month, otherwise the battery must be recharged
- In the wireless IO version, the motor comes with an external antenna. This antenna needs to stick out of the box by at least 10cm and should not touch the box (distance > 1cm)
- The motors are delivered in sleep mode. When light falls on the solar panel, it awakens automatically.
- The Smooove sensitive touch transmitters are not compatible with the RS100 Solar IO motor
- When using Chronis, Keypad IO, and Keygo, the “low power mode” must be activated.
- The RS100 Solar IO is not compatible with Smooove Sensitive RS100 IO, animeo Connect or IP/IO, and Set&Go.



With the somfy solar app you can find out in 3 steps what the best solution is for your situation. (App can be downloaded via appstore & google play)

### 11.7 Harol Solar motor

This is a self-contained solar-powered system.

- The solar panel can be fitted to the 3 different S, P or C box types (it is recommended to fit the solar cells onto a 45° or 90° box), but in the P 137-180 enclosures, no motor of 15/20Nm or more can be installed due to the size of the solar panel.
- The panel is always located on the motor side.
- One panel is always installed, regardless of the orientation of the roller shutter.
- The battery is built into the motor.
- With a northern orientation, one cycle per day is guaranteed.
- Ensure that sunlight can reach the solar panel when installing the roller shutter!

|                                                                                     |                  | SOLAR PURE       |
|-------------------------------------------------------------------------------------|------------------|------------------|
| MOTOR                                                                               |                  |                  |
|  | motor type       | Solar Pure       |
|                                                                                     | motor power      | 10- 20Nm         |
|                                                                                     | diameter         | Ø50 mm           |
|                                                                                     | speed            | 12 tpm           |
|                                                                                     | battery          | Built-in battery |
|                                                                                     | battery type     | Li-ion           |
|                                                                                     | battery capacity | 5000 mAh         |
|                                                                                     | cable length     | 20 cm            |
| ZONNEPANEEL                                                                         |                  |                  |
|  | solar panel type | monokristalijn   |
|                                                                                     | capacity         | 4,7 W            |
|                                                                                     | dimensions       | 600 x 62 mm      |
|                                                                                     | lifetime         | 7 jaar           |

Table 16: main characteristics of Harol solar motor

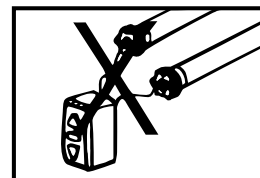
**Note:**

- 5-year warranty on motor, solar panel and battery
- after purchase, the roller shutter must be installed within one month, otherwise the battery must be recharged
- The motor is activated via the on/off button.
- Low battery: The motor emits an intermittent beep during operation.

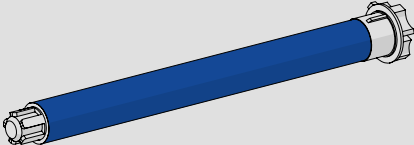
## 11.8 Electric motor connection

Motor:

- All electrical connections have to be made by a qualified fitter/electrician. Electrical fitting- and connection diagrams have to be applied in a correct way and have to conform the local norms and/or demands in vigor. All necessary motor diagram's and manuals for the chosen type of motor and/or domotical accessories are made available.
- NEVER CONNECT 2 MOTORS TO 1 END SWITCH.  
If you want to connect several motors to one or more end switches, always use relay boxes





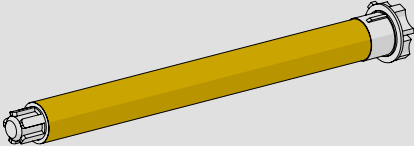


see instruction manual Somfy (included)

[www.somfy.com](http://www.somfy.com)







see instruction manual

[www.harol.com](http://www.harol.com)



## 12. DOOR/WINDOW COMBINATIONS

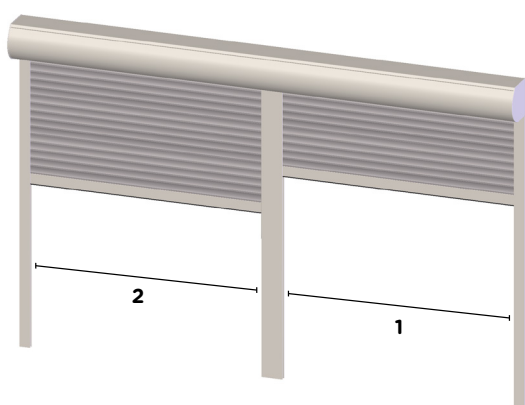
- A single continuous box can be used for two or three roller shutters.
  - DVC: directly abutting roller shutters.
  - DVS: small gap between individual roller shutters.
- Individual or collective operation is possible.
- Maximum box width: 6 m.



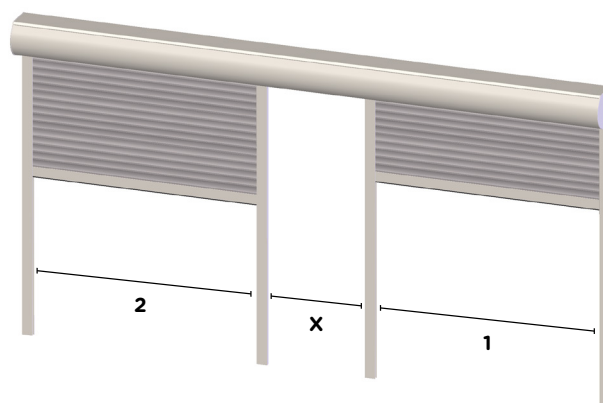
### Note:

Coupled operation in the centre is not possible with DVC2 and DVS2. With central guide:

- two operating mechanisms cannot be placed immediately adjacent to each other.
- No entry guides: therefore ILmo motors are not possible.
- When using Oximo and RS100 motors, the upper point must be manually adjusted

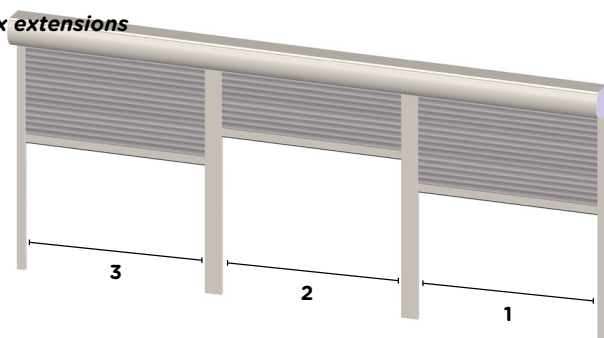


DVC2 (1 box & 2 roller shutters)

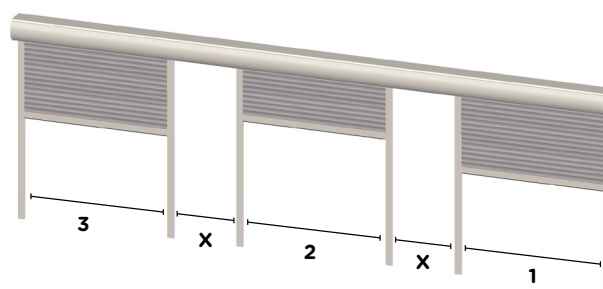


DVS2 (1 box, 2 roller shutters & 1 empty space)

Figure 30:  
Box extensions



DVC3 (1 box & 3 roller shutters)



DVS3 (1 box, 3 roller shutters & 2 empty spaces)

Figure 31:  
Bolt

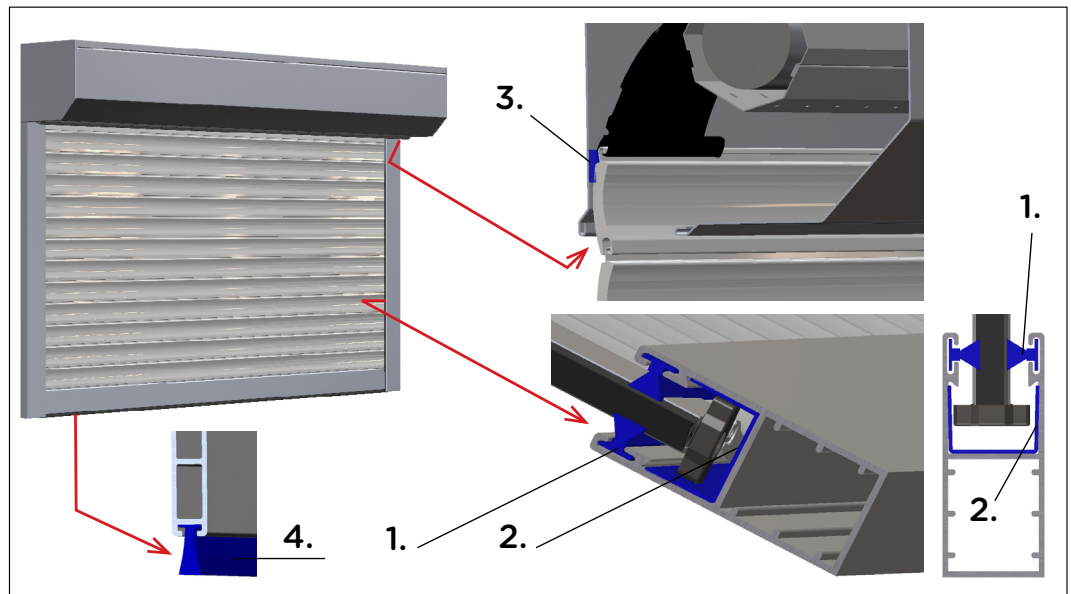
### 13. SUPPLEMENTS

#### 13.1 Blackout Option

##### Option A1661

Function: greatly reducing possible light reflection\*

- along the guides:
  - with a brush with integrated fin (1) (BV60 blackout seal: the fin provides stability to the brush)
  - with a dark chamber in the guide opening (2)
- along the cabinet: with a sealing tape (3) at the back of the cabinet
- along the bottom slat: the bottom slat is fitted with a brush (4)



**Figuur 29:**  
**Darkening Option**

##### Conditions:

- Operation: only possible with motor operation & axle 60
- Slat selection: only with ALU242(S), without daylight openings
- Guides: only with: 117, 118, 119, 120, 127, 128 & 129
- Screen: not possible

##### To obtain the most favorable result, please choose:

- the heaviest slat = the ALU242(s)
- a dark type of slat
- a dark paint color for guides and cabinet
- the careful sealing of the total roller shutter without interruptions

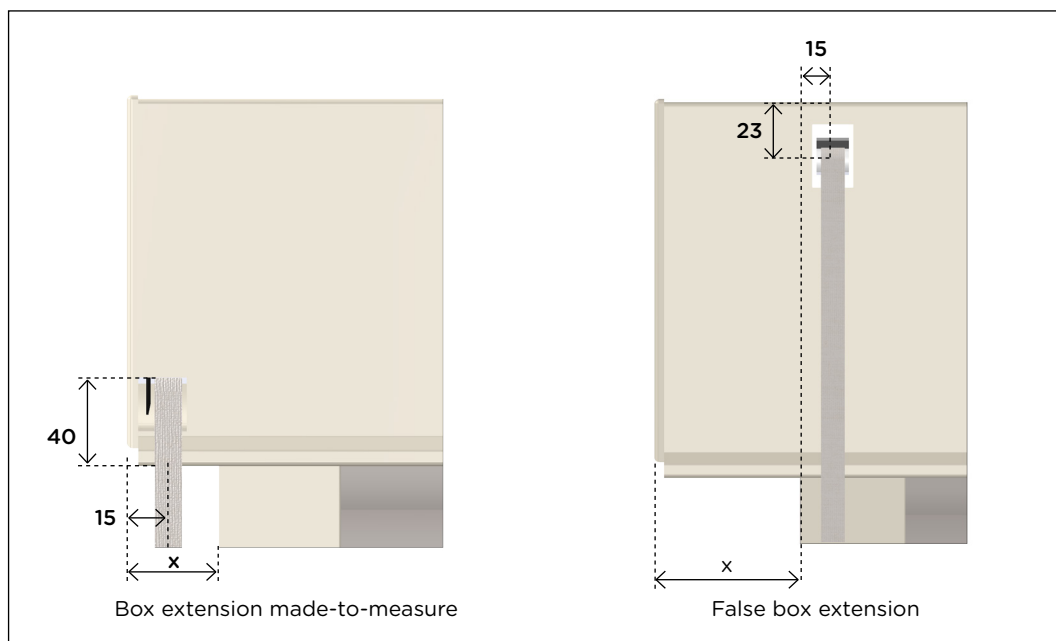
\* = roller shutter is in test environment fully darkening from 2 m.

### 13.2 Box extensions

#### Option A96 up to A101

- In the event that the operating exit needs to be located in a different position from the standard position.
- If the box needs to be extended for aesthetic reasons.
- Choice of the following types:
  - Box extension made-to-measure.  
*Recession for the operating exit of more than 30 mm (max 300 mm).*
  - False box extension.  
*Operating exit remains standard, only the box is extended (max 300 mm).*
  - Open box extension.  
*Operating exit remains standard, only the box is extended (max 300 mm), but not covered with a console.*

**Figure 32:**  
**Cylinder lock**

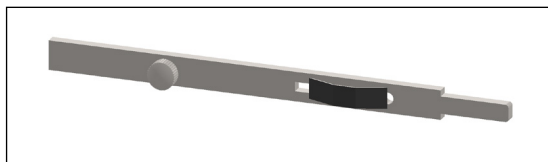


**Figure 33:**  
**DVA switch**

### 13.3 Locking devices

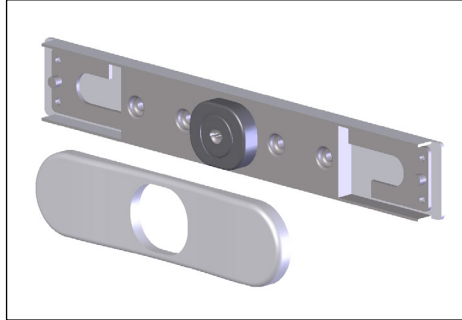
#### Bolt:

- Option A1 up to A5.
- Fitted in the bottom lath.
- Can only be operated from inside.



## Cylinder lock:

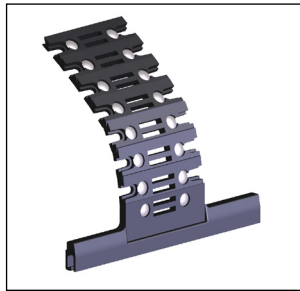
- In bottom lath option A12 up to A14; 60 mm option A26 up to A30; hand height (approx. 800 mm) option A671 up to A676.
- Fitted in the bottom lath or in the intermediate slat.
- The intermediate slat can be placed at hand height or just above the bottom lath.
- Can be operated from inside and outside.



## Automatic locking device DVA:

- Option A82
- Can only be used with crank handle operation or electric operation.
- The DVA system is specially fashioned to fully block the shutter curtain.
- Increases the roll-up diameter (see Table 6).

**Figure 34:**  
**Safety package**



## 13.4 Safety options

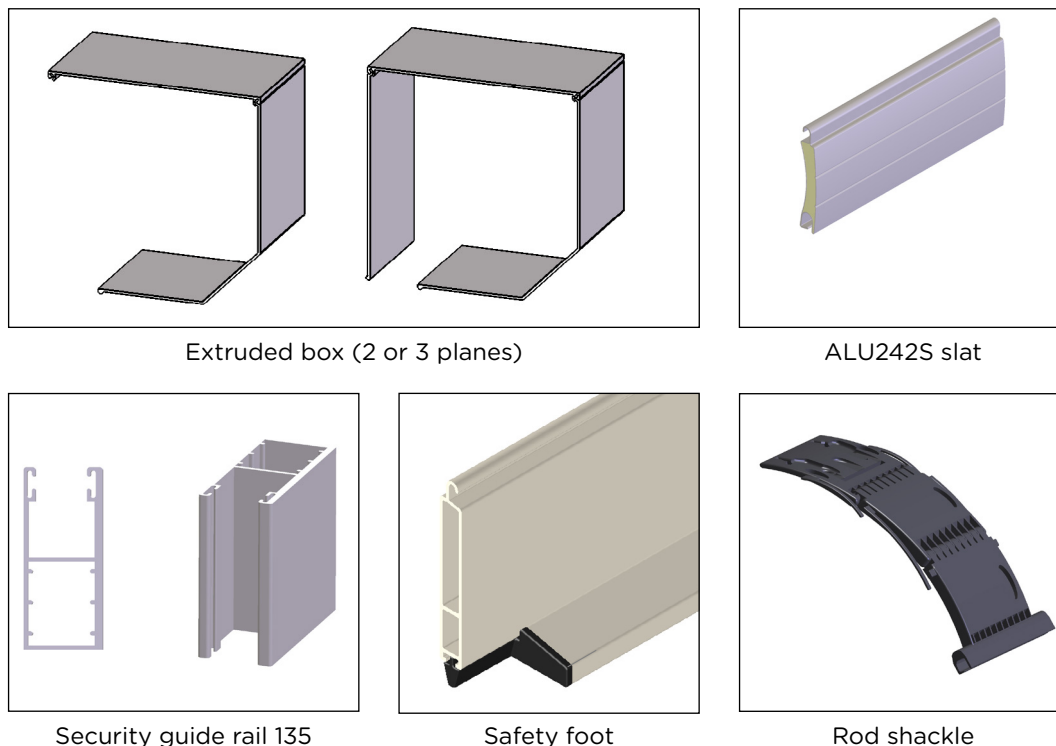
Additional emphasis can be placed on security for various components of the VR150. The following options are available:

- An extruded box (2 or 3 planes) instead of roll formed.
- A reinforced ALU242S slat.
- A 135 security guide rail.
- An extra reinforced bottom lath (option A716: "security bottom lath").
- Lift security system\*: with the Ilmo, Becker, Silensio RS100 io and Oximo motors, the curtain is fixed to the axle using rod shackles. These shackles prevent lifting of the curtain.

**Figure 35:**  
**Filling plate for arch**

\* The DVA system can also be selected as the lift security system with motor or crank handle operation.

Each of these options can be selected separately.  
If all options are chosen together, a 'security package' discount applies (see price list).

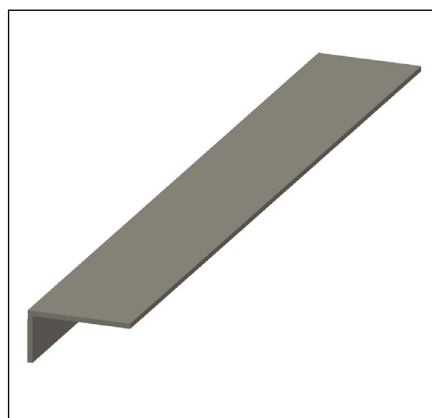


**Figure 36:**  
**Projection arms**

## 13.5 Filling plates for arches

### Option A86

- In certain cases the roller shutters can be supplied with a more attractive finish by using a filling plate for arches.
- L-shaped coated plates.
- Sizes: COV 40, COV 80, COV 130, COV 180.

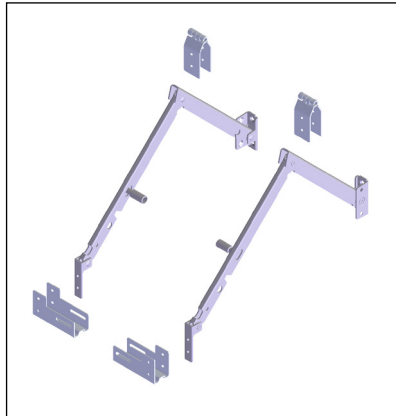


**Figure 37:**  
**L profile**

## 13.6 Projection arms

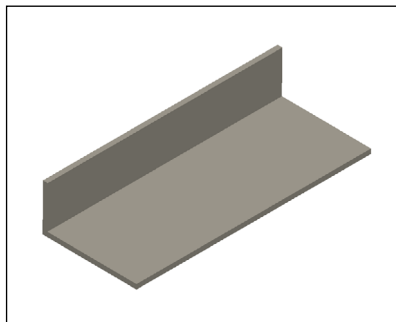
### Option A70

- System whereby in closed position the shutter curtain can be "projected" outwards at a certain angle.
- Minimum space of 25 mm is required between the wall (or window) and the shutter guide rail for mounting the projection arms.
- Not with assembly type 5.
- Maximum width for a roller shutter with projection arms is 1500 mm.
- Always in combination with connecting profile 118D (option A65).



## 13.7 Fortifications

- Option A15 fitted, A114 not fitted.
- L-section profile attached to the bottom lath provides additional stiffness.
- Choose from:
  - L-20/40/2, supplied individually.
  - L-20/40/2, mounted onto bottom lath.



## 13.8 Acoustic insulation

- Option A1615
- The self-adhesive foil is glued in the box.

## 14. GENERAL REMARKS

- The surfaces of the slats can become slightly marked due to friction between the slats during rolling and unrolling. This is a natural consequence of normal use of the product and is thus not covered by the warranty.
- Reflection of small traces of light between closed light slats or between curtain and guide rail are typical properties of the product and cannot be excluded. If the roller shutter must darken as optimally as possible, it is best not to choose light slats. When slats with small roll-up diameter are chosen (ALU237, PVC37), it is possible, because of the reflection, that small traces of light are visible when the roller shutter is down in comparison with bigger slats (ALU242, ALU242S et MIDI).

**Note:** a roller shutter never darkens 100%

- When choosing dark-coloured slats please pay attention to the following: mutual friction can cause scratches on all types of slats. These scratches are more visible on dark colours than on light-coloured slats. Dark-coloured slats are also more susceptible to influences from high temperatures. When heated, these slats will expand more strongly than their lighter counterparts and, when used for the first time after shutting down, there may be a creaking noise as a result of mutual adhesion of the slats due to these high temperatures. And because of the greater absorption value of dark colours, the thermal value of the darker slats will consequently be less good than that of light-coloured slats. Please take the above points into account when choosing the most suitable slat for the desired situation.
- In case of a shutter with almost max. width of the chosen slat type, the risk of bending will rise. This has no effect on the quality of the product.
- It is typical of boxes made from tape materials that internal tensions (in the muffling kiln) cause a slight deflection in the box.
- All electrical connections must be made according to the statutory provisions of the relevant country. Electrical connections and proper operation are the responsibility of the installer.
- Harol does not accept any liability whatsoever for tearing loose of shutter curtains due to wind or storm. The installer must take into consideration all precautionary measures necessary to order a product suitable for the installation site.
- All information in this brochure is provided in good faith and is for informational purposes only. It reflects the present state of our knowledge and abilities and cannot be used against us.
- Harol reserves the right to make alterations to the product without prior notice.

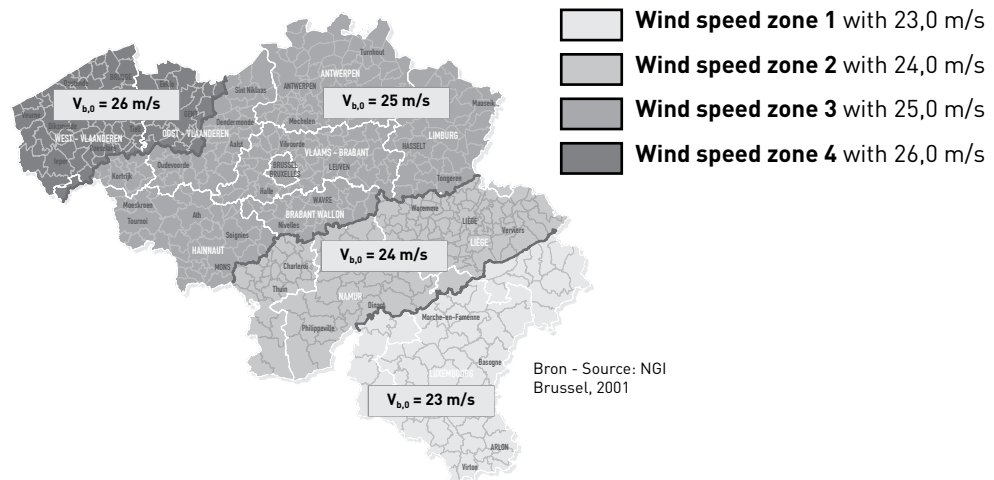
## 15. WIND RESISTANCE AND OPERATING CLASSES IN ACCORDANCE WITH NBN EN 13659

### 15.1 Compulsory application since 1 April 2006

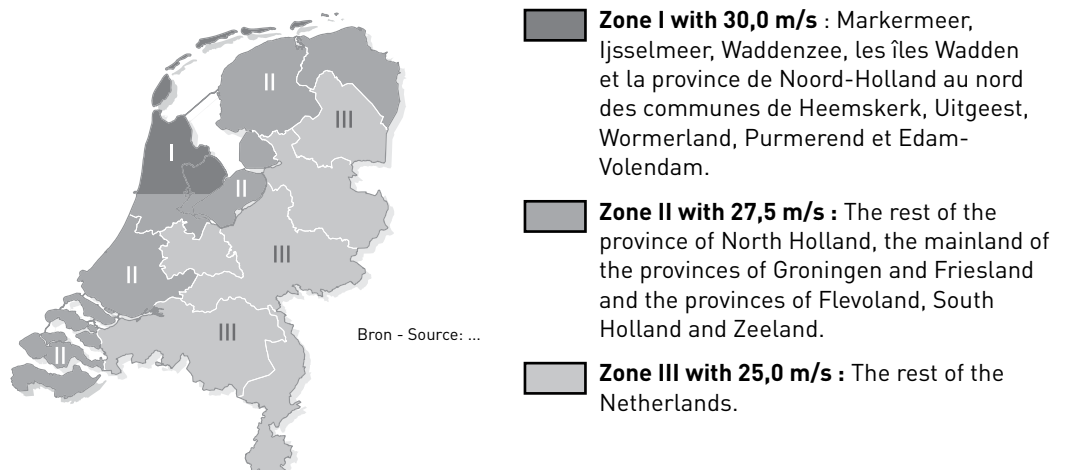
The new NBN EN 13659 standard has been in force since 1 April 2006. In accordance with this standard, from that date onwards roller shutters must carry a CE mark that also shows the wind resistance class. There are standards and guidelines for different countries in order to define which wind resistance class is necessary for which application. For Germany, the German “Bundesverband Rollläden und Sonnenschutz” commissioned the development of an IFT guideline entitled “Application advice for external closures”. This guideline (DIN 1055-4:2005-3) divides the territory of Germany into wind speed or wind load zones and terrain categories. In this way, the applicable wind speed zone and terrain category can be derived from the location of the building. The installation height of the closures indicates the third necessary reference measurement. For Belgium, everything is shown in standard NBN EN 1991-1-4 and the territory is divided into four wind speed zones. The Netherlands is divided into three wind speed zones in accordance with standard NEN-EN 1991-1-4: 2005/NB:2007 and France has four wind speed zones in accordance with standard DTU 34.2. For other countries, ask the local meteorological services for the values!

### 15.2 Détermination des zones de vitesses de vent ou zones de charges de vent

#### Belgium



#### The Netherlands



Germany



Bron - Source:  
DIN 1055-4:2005-3

France



Bron - Source: ...

|  |                                       |
|--|---------------------------------------|
|  | <b>Wind load zone 1</b> with 22,5 m/s |
|  | <b>Wind load zone 2</b> with 25,0 m/s |
|  | <b>Wind load zone 3</b> with 27,5 m/s |
|  | <b>Wind load zone 4</b> with 30,0 m/s |

|  |                                       |
|--|---------------------------------------|
|  | <b>Wind load zone 1</b> with 22,0 m/s |
|  | <b>Wind load zone 2</b> with 24,0 m/s |
|  | <b>Wind load zone 3</b> with 26,0 m/s |
|  | <b>Wind load zone 4</b> with 28,0 m/s |

## 15.3 Definition of the terrain or roughness category

|  |                                                                                                                                                                                                                                                |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Terrain category 0</b> (The most stringent)<br>Sea or coastal area with wind flowing over the open sea.                                                                                                                                     |
|  | <b>Terrain category I</b><br>Lakes or flat and horizontal area with negligible vegetation and no obstacles.                                                                                                                                    |
|  | <b>Terrain category II</b><br>Area with low vegetation such as grass, with or without a few free-standing obstacles (trees, buildings) with a distance between them of at least 20 times their height (= gap of at least 20 obstacle heights). |
|  | <b>Terrain category III</b><br>Area with regular overgrowth or buildings or isolated obstacles with a gap of no more than 20 obstacle heights (e.g. villages, peri-urban areas, sustainable forests etc.)                                      |
|  | <b>Terrain category IV</b> (The least stringent)<br>Urban areas where at least 15% of the surface area is covered with buildings with an average height of over 15 metres.                                                                     |

### 15.4 Installation height

In addition to the wind speed zone and the terrain category, the installation height also plays a role in defining the wind resistance classes. The table below shows the recommended wind resistance class depending on the installation height in accordance with the applicable standards in each country.

The minimum class in the application advice notes is wind resistance class 2. That does not mean that class 0 or class 1 products must not be used. However, a product with the relevant wind resistance class is recommended to define a particular quality level.

| BELGIUM | Terrain category | Installation heights > 0 - 8 metres |             |             |             | Installation heights > 8 - 20 metres |             |             |             | Installation heights > 20 - 100 metres |             |             |             |
|---------|------------------|-------------------------------------|-------------|-------------|-------------|--------------------------------------|-------------|-------------|-------------|----------------------------------------|-------------|-------------|-------------|
|         |                  | Wind speed zone                     |             |             |             | Wind speed zone                      |             |             |             | Wind speed zone                        |             |             |             |
|         |                  | 1<br>23 m/s                         | 2<br>24 m/s | 3<br>25 m/s | 4<br>26 m/s | 1<br>23 m/s                          | 2<br>24 m/s | 3<br>25 m/s | 4<br>26 m/s | 1<br>23 m/s                            | 2<br>24 m/s | 3<br>25 m/s | 4<br>26 m/s |
|         |                  |                                     |             |             |             |                                      |             |             |             |                                        |             |             |             |
|         | 0                | 3                                   | 4           | 4           | 4           | 4                                    | 4           | 4           | 5           | 4                                      | 5           | 5           | 5           |
|         | I                | 3                                   | 4           | 4           | 4           | 4                                    | 4           | 4           | 5           | 4                                      | 5           | 5           | 5           |
|         | II               | 3                                   | 3           | 3           | 4           | 3                                    | 4           | 4           | 4           | 4                                      | 5           | 5           | 5           |
|         | III              | 2                                   | 3           | 3           | 3           | 3                                    | 3           | 3           | 4           | 4                                      | 5           | 5           | 5           |
|         | IV               | 2                                   | 3           | 3           | 3           | 3                                    | 3           | 3           | 3           | 4                                      | 4           | 4           | 4           |

| THE NETHERLANDS | Terrain category | Installation heights > 0 - 8 metres |               |             | Installation heights > 8 - 20 metres |               |             | Installation heights > 20 - 100 metres |               |             |
|-----------------|------------------|-------------------------------------|---------------|-------------|--------------------------------------|---------------|-------------|----------------------------------------|---------------|-------------|
|                 |                  | Wind speed zone                     |               |             | Wind speed zone                      |               |             | Wind speed zone                        |               |             |
|                 |                  | 1<br>30 m/s                         | 2<br>27,5 m/s | 3<br>25 m/s | 1<br>30 m/s                          | 2<br>27,5 m/s | 3<br>25 m/s | 1<br>30 m/s                            | 2<br>27,5 m/s | 3<br>25 m/s |
|                 |                  |                                     |               |             |                                      |               |             |                                        |               |             |
|                 | 0                | 4                                   | 4             | 4           | 5                                    | 5             | 4           | 6                                      | 5             | 5           |
|                 | I                | 4                                   | 4             | 4           | 5                                    | 5             | 4           | 6                                      | 5             | 5           |
|                 | II               | 4                                   | 4             | 3           | 5                                    | 4             | 4           | 5                                      | 5             | 5           |
|                 | III              | 4                                   | 3             | 3           | 4                                    | 4             | 3           | 5                                      | 5             | 5           |
|                 | IV               | 3                                   | 3             | 3           | 4                                    | 3             | 3           | 5                                      | 4             | 4           |

| FRANCE | Terrain category | Installation heights > 0 - 8 metres |             |             |             | Installation heights > 8 - 20 metres |             |             |             | Installation heights > 20 - 100 metres |             |             |             |
|--------|------------------|-------------------------------------|-------------|-------------|-------------|--------------------------------------|-------------|-------------|-------------|----------------------------------------|-------------|-------------|-------------|
|        |                  | Wind speed zone                     |             |             |             | Wind speed zone                      |             |             |             | Wind speed zone                        |             |             |             |
|        |                  | 1<br>22 m/s                         | 2<br>24 m/s | 3<br>26 m/s | 4<br>28 m/s | 1<br>22 m/s                          | 2<br>24 m/s | 3<br>26 m/s | 4<br>28 m/s | 1<br>22 m/s                            | 2<br>24 m/s | 3<br>26 m/s | 4<br>28 m/s |
|        |                  |                                     |             |             |             |                                      |             |             |             |                                        |             |             |             |
|        | 0                | 3                                   | 4           | 4           | 4           | 4                                    | 4           | 5           | 5           | 4                                      | 5           | 5           | 5           |
|        | I                | 3                                   | 4           | 4           | 4           | 4                                    | 4           | 5           | 5           | 4                                      | 5           | 5           | 5           |
|        | II               | 3                                   | 3           | 4           | 4           | 3                                    | 4           | 4           | 4           | 4                                      | 5           | 5           | 5           |
|        | III              | 2                                   | 3           | 3           | 3           | 3                                    | 3           | 4           | 4           | 4                                      | 5           | 5           | 5           |
|        | IV               | 2                                   | 3           | 3           | 3           | 3                                    | 3           | 3           | 3           | 4                                      | 4           | 4           | 4           |

| GERMANY | Terrain category | Installation heights > 0 - 8 metres |               |               |               | Installation heights > 8 - 20 metres |               |               |               | Installation heights > 20 - 100 metres |               |               |               |
|---------|------------------|-------------------------------------|---------------|---------------|---------------|--------------------------------------|---------------|---------------|---------------|----------------------------------------|---------------|---------------|---------------|
|         |                  | Wind speed zone                     |               |               |               | Wind speed zone                      |               |               |               | Wind speed zone                        |               |               |               |
|         |                  | 1<br>22,5 m/s                       | 2<br>25,0 m/s | 3<br>27,5 m/s | 4<br>30,0 m/s | 1<br>22,5 m/s                        | 2<br>25,0 m/s | 3<br>27,5 m/s | 4<br>30,0 m/s | 1<br>22,5 m/s                          | 2<br>25,0 m/s | 3<br>27,5 m/s | 4<br>30,0 m/s |
|         |                  |                                     |               |               |               |                                      |               |               |               |                                        |               |               |               |
|         | 0                | 3                                   | 4             | 4             | 4             | 4                                    | 4             | 5             | 5             | 4                                      | 5             | 5             | 6             |
|         | I                | 3                                   | 4             | 4             | 4             | 4                                    | 4             | 5             | 5             | 4                                      | 5             | 5             | 6             |
|         | II               | 3                                   | 3             | 4             | 4             | 3                                    | 4             | 4             | 5             | 4                                      | 5             | 5             | 5             |
|         | III              | 2                                   | 3             | 3             | 4             | 3                                    | 3             | 4             | 4             | 4                                      | 5             | 5             | 5             |
|         | IV               | 2                                   | 3             | 3             | 3             | 3                                    | 3             | 3             | 4             | 4                                      | 4             | 4             | 5             |

### 15.5 Wind resistance depending on slat and guide

#### ALU237

| guide                                    | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 | 2500 | 2600 | 2700 | 2800 | 2900 | 3000 |
|------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 118(B)/118D/119(B)/120/121/135(B) / 118B | 6    |      |      |      |      |      |      | 5    |      | 4    |      | 3    |      |      | 2    |      |      | 1    |      |      |      |
| 118s/ 118s(B)                            | 6    |      |      |      |      | 5    | 4    |      | 3    |      |      | 2    |      | 1    | 0    |      |      |      |      |      |      |

#### ALU242(S)

| guide                                       | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 | 2500 | 2600 | 2700 | 2800 | 2900 | 3000 | 3100 | 3200 | 3300 | 3400 | 3500 | 3600 | 3700 | 3800 | 3900 | 4000 |
|---------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 117/118/118D/119/120<br>121/127/128/129/135 | 6    |      |      |      |      |      |      |      |      |      |      | 5    | 4    | 3    |      |      | 2    |      | 1    |      |      | 0    |      |      |      |      |      |      |      |      |      |
| 117S/118S                                   | 6    |      |      |      |      |      |      |      |      |      | 5    | 4    | 3    |      | 2    |      | 1    | 0    |      |      |      |      |      |      |      |      |      |      |      |      |      |

#### PVC37

| guide                                       | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 |
|---------------------------------------------|------|------|------|------|------|------|------|
| 117/118/118D/119/120<br>121/127/128/129/135 | 3    | 2    | 1    | 0    |      |      |      |
| 117S/118S                                   | 3    | 2    | 1    | 0    |      |      |      |
| H118/H128                                   | 4    | 3    | 2    | 1    | 0    |      |      |

#### MIDI

| guide                                       | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 |
|---------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 117/118/118D/119/120<br>121/127/128/129/135 | 4    |      | 3    |      | 2    | 1    | 0    |      |      |      |      |      |      |      |      |
| 117S/118S                                   | 3    |      | 2    | 1    | 0    |      |      |      |      |      |      |      |      |      |      |
| H118/H128                                   | 5    | 4    | 3    |      | 2    | 1    | 0    |      |      |      |      |      |      |      |      |

16. ORDER FORM

Click on the link below:

[Order form VR150](#)