

FRONT-MOUNTED ROLLER SHUTTER

VR1000

Art. no. 064050

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TECHNICAL DATA SHEET FOR FRONT-MOUNTED ROLLER SHUTTER VR1000

1. GENERAL

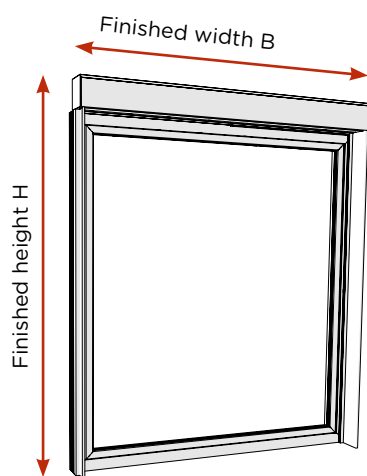
The VR1000 front-mounted screen is a roller shutter, which is first fitted to a window frame, and then fitted, complete with the frame into the exterior wall. Because the roller shutter remains outside the thermal shell of the house, it can be used in the construction of passive and low-energy houses.

2. DIMENSIONS

The sizes that must be specified are the width W and height H.

The **finished width W** is equal to the width of the box, which also corresponds to the distance between the outer sides of the left and right guide rails. This width is equal to the width of the window.

The **finished height H** is equal to the **window height + the box height**.



Type	Box height
150	158
165	173
180	188
205	213



Table 1:
box heights torque bar

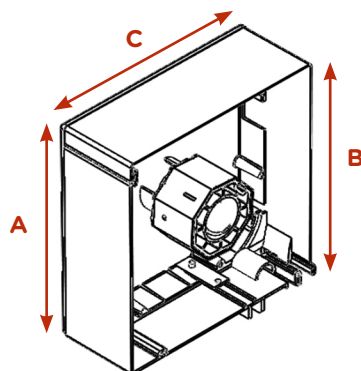
Figure 1:
finished sizes

The minimum and maximum values for the width and height, based on the selected slats, can be found in table 7.

3. THE BOX

The outer frame of the box is made of 2 parts of extruded aluminium: the L-shaped front panel and the hinged inspection cover. The rear of the box is a rolled aluminium plate and the sides are enclosed by side consoles.

The VR1000 is only available in model 'C' and in 4 different sizes: 150-165-180 and 205.



	TYPE	A	B	C
BOX MODEL	150	150	158	150
	165	165	173	165
	180	180	188	180
	205	205	213	205

Table 2:
box sizes

Figure 2:
box sizes

TECHNICAL DATA SHEET FOR FRONT-MOUNTED ROLLER SHUTTER VR1000

Colours: see price list.

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



Note:

Ensure the inspection cover of the shutter box can always be opened, so that the mechanical parts inside are accessible at all times. If this rule is not followed, Harol cannot be held responsible for the cost of any demolition or paint work!

Attention!

If the box is installed reversed, it must be possible to open the window from the inside. In the event of a technical fault in the lowered position, access to the box must be obtained from the inside.

4. SIDE CAPS

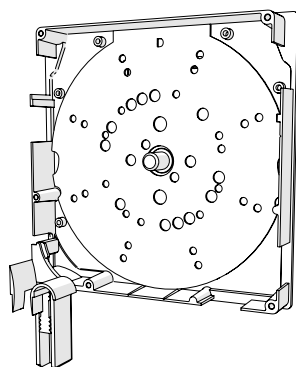


Figure 3:
the console

Material: Aluminium.

Colours: always match the box colour.

Type: C = square consoles.

Support plate

The side cap on the operating side is always supplied with an electrolytically galvanised support plate. The plate supports the motor control unit. Each console size has its own specific support plate.

Entry guide

The entry guide, which is anchored in the console pivot, ensures quiet entry. In combination with the rotatable bottom lath stops, it forms a positive stop for the bottom lath in the upper position.

5. ROLL-UP TABLES

The maximum roll-up of a particular slat in a specific box depends on the motor type selected, and the method of suspension and shaft size. If DVA is chosen, this will also have an effect on the roll-up. The 4 tables on the next page show the maximum heights based on the size of the box and the slats.

Table 3:

maximum height when operating the motor, where the panel is attached to the shaft with suspending springs.

Table 4:

maximum height when operating the motor, where the panel is attached to the shaft with rigid links.

Table 5:

maximum height when operating the motor, where the panel is attached to the shaft with DVA system.

TECHNICAL DATA SHEET FOR FRONT-MOUNTED ROLLER SHUTTER VR1000



TYPE OF SLAT	TYPE OF SHAFT	LT, LS, ALTUS AND SOLUS			
		150	165	180	205
PVC37	40	2000	2400	2400	2400
	60	1700	2400	2400	2400
MIDI	40	1400	1800	2000	2900
	60	1200	1600	2200	2900
ALU237	40	1860	2640	3000	3000
	60	1710	2520	3000	3000
ALU242 (S)	40	1350	2020	2200	3000
	60	1470	1890	2100	2940

Table 3: roll-up table: LT, LS, Altus and Solus



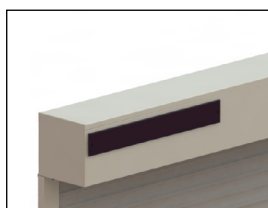
TYPE OF SLAT	TYPE OF SHAFT	OXIMO, RS100 SILENSIO, ILMO & BECKER STANDARD MOTOR			
		150	165	180	205
PVC37	60	2000	2400	2400	2400
MIDI	60	1340	2040	2200	3000
ALU237	60	1730	2520	3000	3000
ALU242 (S)	60	1370	1870	2140	3000

Table 4: roll-up table: Oximo, RS100, Ilmo & Becker standard motor



TYPE OF SLAT	TYPE OF SHAFT	ROLL-UP TABLE WITH DVA			
		150	165	180	205
PVC37	40	1900	2350	2400	2400
	60	1650	2100	2400	2400
MIDI	40	1200	1650	2100	2650
	60	1050	1500	1900	2800
ALU237	40	1770	2290	2900	3000
	60	1450	2000	2500	3000
ALU242 (S)	40	1200	1600	2050	3000
	60	980	1350	1840	2860

Table 5: DVA roll-up table

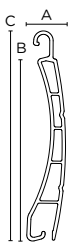


TYPE OF SLAT	TYPE OF SHAFT	SOLAR			
		150	165	180	205
PVC37	60	1700	2400	2400	2400
MIDI	60	1200	1700	2040	2900
ALU237	60	1630	2520	3000	3000
ALU242 (S)	60	1270	1870	2140	3000

Tableau 6 : Solar roll-up table

6. THE PANEL

Slats: types: PVC37, MIDI, ALU237 ALU242 and 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 ²)	2.86	3.5	2.80	2.85	4.32
Gross weight (kg/m ²)	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 ²)	3	5	7	9	10
Resistance value ΔR (m ² K/W)	0.19	0.21	0.16	0.16	0.16
Resistance value R_{SH} (m ² K/W)	0.065	0.088	0.03	0.03	0.03

* Because of its harder foam, the ALU242S slat is suitable for use as a security slat (included in the security package).

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

Table 7: *slat data*

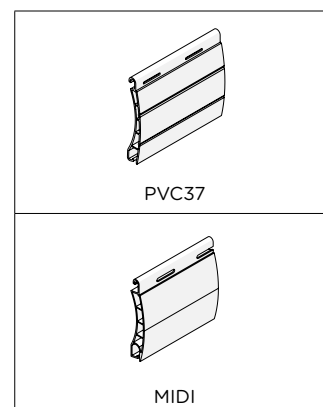
Material: types: PVC37, MIDI, ALU237, ALU242 and ALU242S.

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

Colour chart:

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

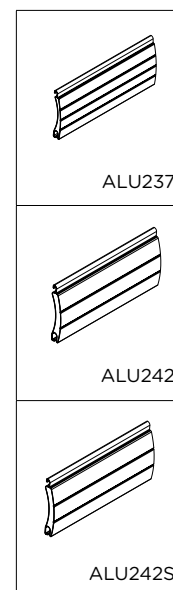
Table 8: *PVC colour chart*



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				STANDARD ALU-SLATS		
		RAL	CODE	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	±1011	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 9 : ALU color chart



Optional daylight and ventilation slot options:

- without daylight (code 0)
- 1/3 daylight (code 1)
- 1/2 daylight (code 2)
- 2/3 daylight (code 3)
- 1/1 daylight (code 4) (7 fixed 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 daylight slats or between curtain and guide rail are inherent properties of the product and cannot be eliminated. If the roller shutter is required for a complete blackout, it is best not to select daylight slats.

Attachment to the shaft:

- Suspension links: Oximo IO motor (standard), Ilmo, Silensio RS100 io or Becker.
 - The suspension link is fitted with protective felt as standard (function: reduces marking of the slats by the links).
- flocked suspension springs: on all other motors:
 - 3 per metre of width.
 - 2 types: - suspension spring 13.6 cm (for box 150 & 165)
 - suspending spring 17.4 cm (for box 180 & 205)

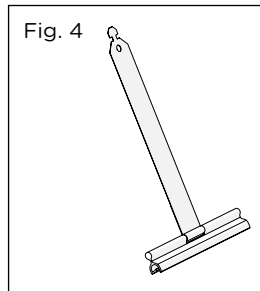


Figure 4:
the suspending spring

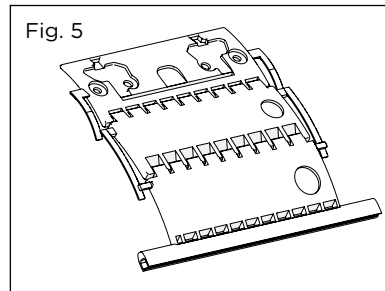


Figure 5:
the suspension link

7. THE BOTTOM LATH

Material: extruded aluminium.

Colour: the bottom lath is supplied in the same colour as the box as standard.

The bottom lath is always fitted with a rubber seal and rotatable bottom lath stops.

- Function of the rubber:
 - Absorbs sound when closing & seals against wind and rain.
 - Function of the lath stops:
 - To stop the upward movement of the roller shutter panel against the entry guide.
- Note: no stops with LT motors

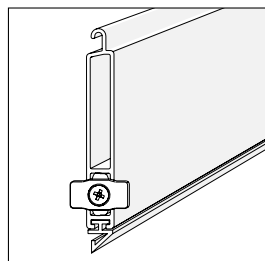


Figure 6:
the bottom lath with
rubber seal and rotatable
bottom lath stop

The security bottom lath:

Due to its special shape, the safety bottom lath provides additional reinforcement to the bottom lath. This also seals the bottom rail so that fitting a rubber seal is not required. The security bottom lath is included in the safety package.

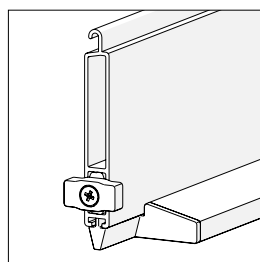


Figure 7:
the security bottom lath

8. THE GUIDE RAILS

The complete wide guide rail assemblies are made up of a basic guide rail (B) with EPDM seals (A). This basic guide rail is fixed to the window. The clip profile (C) is then screwed onto it, after which the cover (D) can be clipped onto the clip profile.

Material: extruded aluminium.

Colour: supplied in the same colour as the box as standard.

Types: choice of different types (118B - 118sB - 119B and 135B).

The parts of the guide rail:

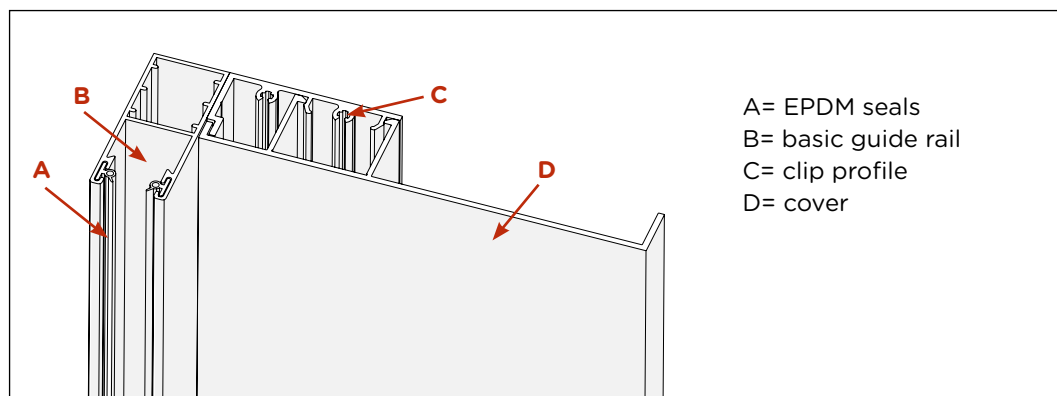


Figure 8:
118B guide rail

A) EPDM seals

- Low-noise operation.
- Sound dampening in high-wind conditions.
- Depending on the type of slat, a custom seal is used in the guide rail.
- Optional: brushes (bv60) in the guides.

B) Basic guide rail

- Choose from: 118 / 118s / 119 & 135 guide rails.

C) Clip profile

- Is screwed onto the basic guide rail.

D) Cover

- Is attached to the clip profile.
- The size of the cover depends on the size of the box.
- 4 different cover sizes.
- The purpose is to cover the cavity.

BOX SIZE	COVER WIDTH (X)
150	130
165	145
180	160
205	185

Table 10:
width of covers

For an overview of the sizes,
see 'Figure 9: the standard guide rails'
on the next page.

TECHNICAL DATA SHEET FOR FRONT-MOUNTED ROLLER SHUTTER VR1000

Overview: the 4 standard guide rails
Optional:

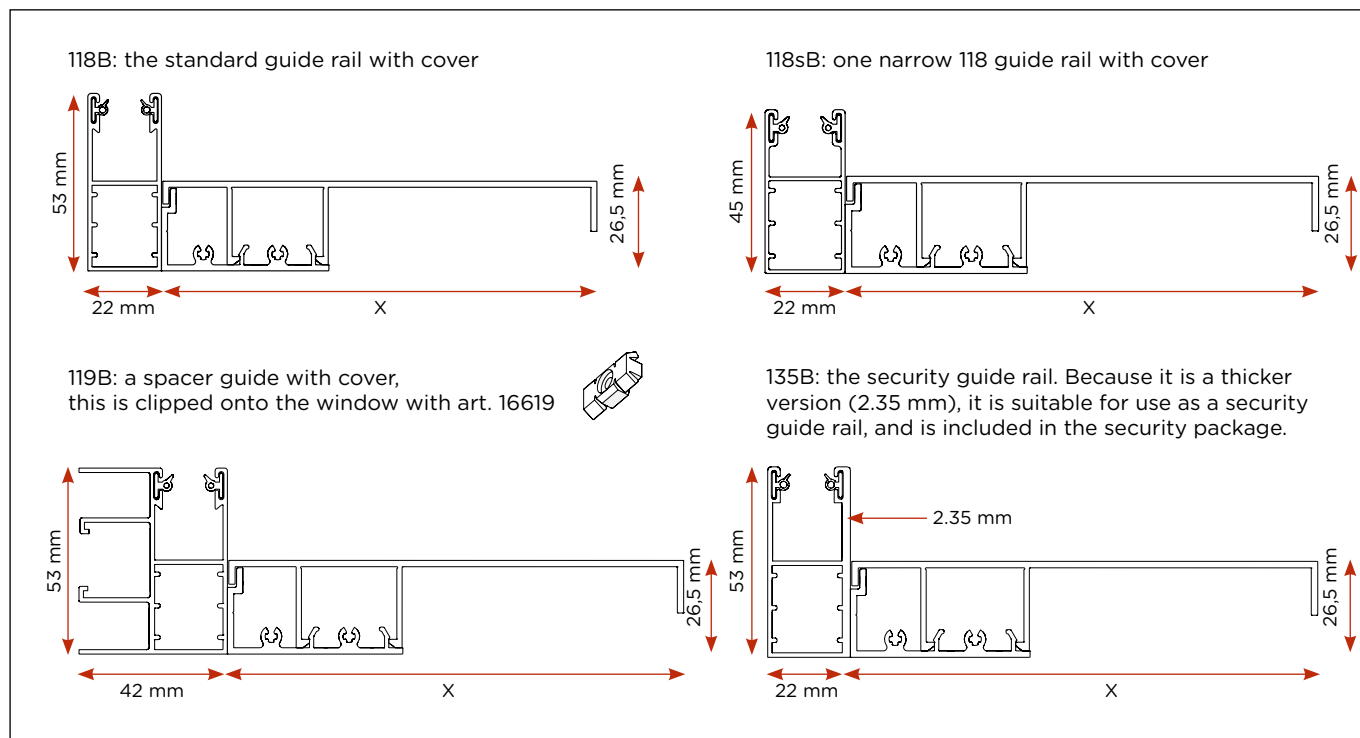


Figure 9:
the standard guide rails

– Guide rails without cover.

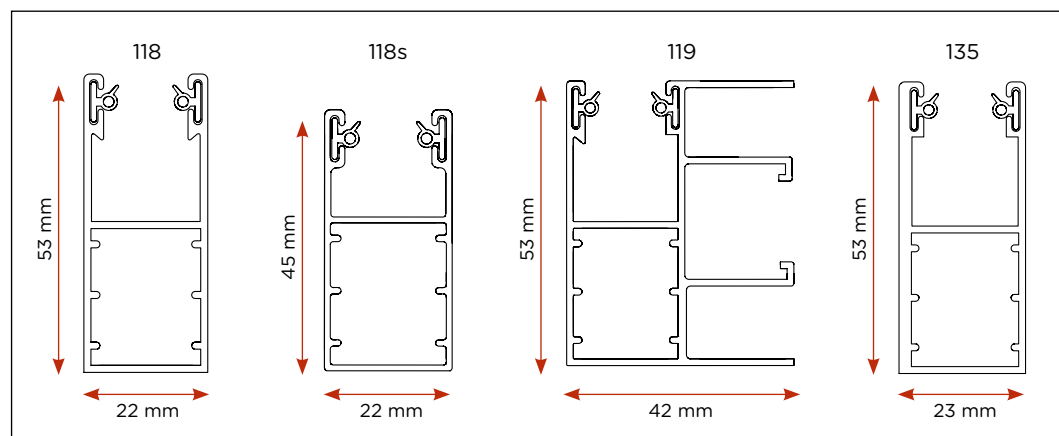


Figure 10:
guide rails without cover

– Guide rails to use with DVC and DVS.

- 120 and 121 as central guide rails for DVC.
- 118D for DVC in combination with the 118S guide rail.

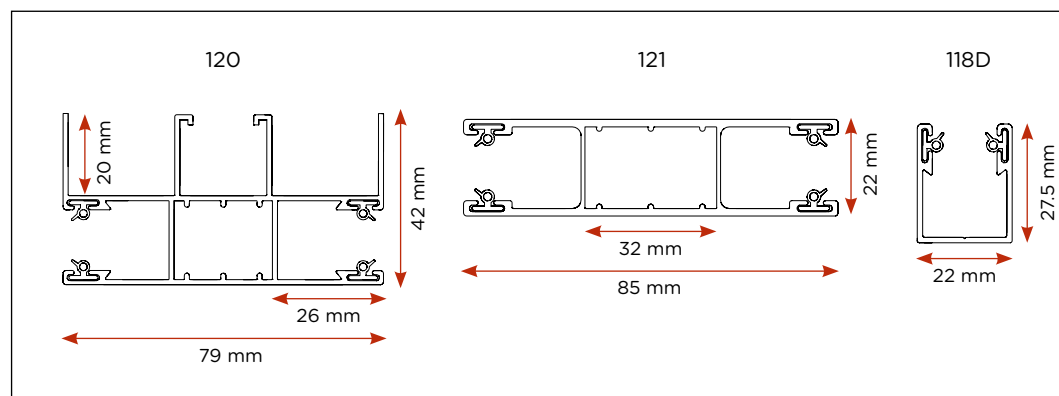


Figure 11:
optional guide rails
for DVC and DVS

– Guides predrilled (118/118B/118S/118SB/135/135B) :

- A168 – to the left/right ⇄
- A167 – to the back ⇐

– Extra length of guide rail

- Cover cap for basic guide rails 118, 119 and 135.
A cap can be selected for the basic guide rails 118, 119 and 135.
This is a black PVC cover.

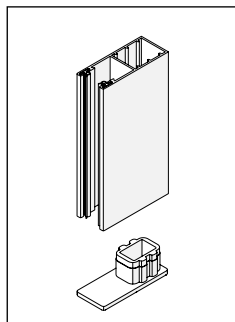


Figure 12:
cover cap

- Chamfering the guide rails with cover 118B / 118sB / 119B / 135B.
To ensure an effective connection to the sill, there is the option to chamfer the guide rails 118B / 118sB / 119B / 135B at the bottom.

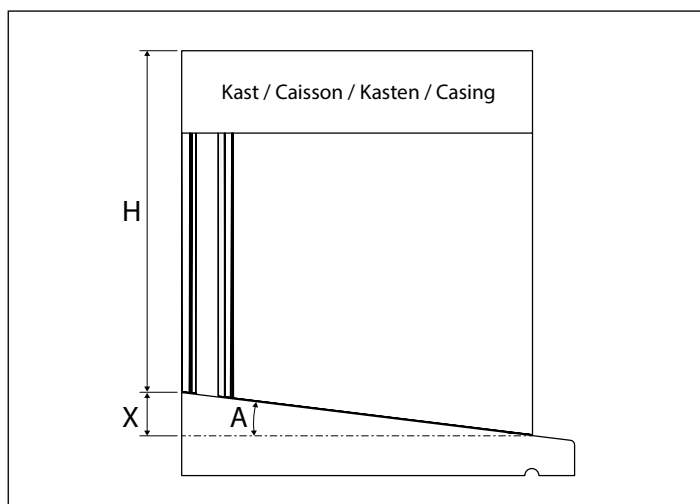


Figure 13:
chamfered guide rail

9. OPERATION

9.1. Electrical operation

The VR1000 is always electrically operated. The operating side can be either on the left or the right. As with all roller shutters, this is as viewed from the inside outwards. The motor is attached blind to the support plate in the console by means of a motor bracket, so that the screws are not visible from the outside.

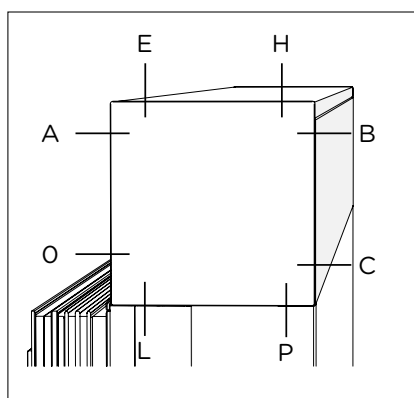


Figure 14:
the command outputs

Command outputs: (see Figure 14)

- Motor: A, B, C, D, E, H, L, O. No throughput provided = X.
- Solar panel cable: A, B, H, E, AZ, BZ. No throughput provided = X

9.2. Somfy Solar motor

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

- Selecting solar will affect the roll-up diameter, as, by default, the battery is fitted inside the box
- 1 panel is always installed, irrespective of the shutter orientation.
- The solar panel (maximum 1) is always supplied separately, fitted with a 1 m extension cable as standard.
- Minimum width = 655mm

Possible options:

- A4116 standard battery included separately (cable length +/-10 cm!)
- A1612/A4122 battery with aluminium casing, supplied separately (cable length= 45cm)
- A1613 extension cable 5m for solar panel
- art.066451 if a longer cable (1m) is required for an external battery

Figuur 15 :
Solar shutters



		RS100 SOLAR IO 6/10NM (A4118)	RS100 SOLAR IO 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 11:
main characteristics of SOLAR 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
- The motors are delivered in sleep mode. When light falls on the solar panel, it awakens automatically.
- When using Chronis, Keypas IO or Keygo, "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)

9.3. Harol Solar motor

This is a self-contained solar-powered system.

- The solar panel is installed on the box.
- 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 kw
	dimensions	600 x 62 mm
	lifetime	7 jaar

Table 16: main characteristics of Harol solar motor

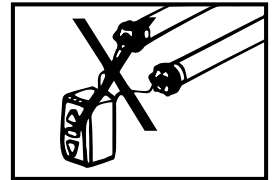
Note:

- 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.

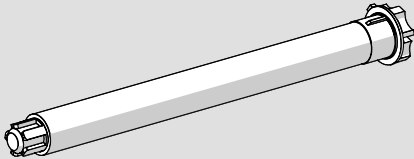
9.4. Electric motor connection

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 be conform the local norms and/or demands in vigor. All the motors are supplied with the necessary diagram's and manuals for the chosen type of motor and/or domotical accessories.
- 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





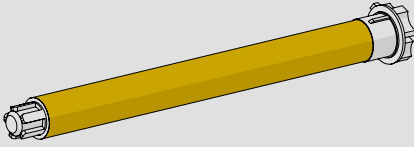


see instruction manual Somfy (included)

www.somfy.com







siehe Benutzerhandbuch

www.harol.com



TECHNICAL DATA SHEET FOR FRONT-MOUNTED ROLLER SHUTTER VR1000

The motor selection table:

	ILMO WT	ILMO SWT	BECKER R	OXIMO WT	LS40	LT50	OXIMO IO ¹	OXIMO S AUTO IO	ALTUS 50 IO	SILENSIO RS100 IO	RS100 SOLAR IO	HAROL PRIMO	HAROL SECURE	HAROL SOLAR PURE
SHAFT	60	60	60	60	40	60	60	60	60	60	60	60	60	60
MINIMUM WIDTH	705	570	695	805	645	705	805	570	805	665	615	775	775	850
MAXIMUM TORQUE	35	6	20	40	9	50	40	6	50	20	20	30	30	20
CONTROLS	switch						transmitter					switch.	transmitter	
NHB														
END POSITIONS	automatic			set	button		transmitter					set	transmitter	
HHO ²	x	x	x	x			x	x		x	x	x	x	x
HHN ³	x	x	x	x			x	x		x	x	x	x	x
CABLE LENGTH	3	3	3	3	2.5	3	5	3	5	5		2.5	2.5	0.2
LUG REQUIRED	x	x	x				x	x		x	x			
OPTIONAL CABLE 5 M	x			x		x						x	x	x
OPTIONAL CABLE 10 M	x			x		x	x		x					
OPTIONAL SECURITY BOTTOM LATH	x	x	x	x			x	x		x	x	x	x	x

Table 12:
motor data

¹ Standard motor.

² HHO= obstacle detection in upward direction.

³ HHN= obstacle detection in downward direction.

Figure 16:

door-window combinations

Other options:

– ABS (option A37):

- Security fitted into the shaft: prevents damage to the shutter panel if an obstacle is encountered during downward movement.
- Option only available with motors with a maximum torque of 30 Nm.

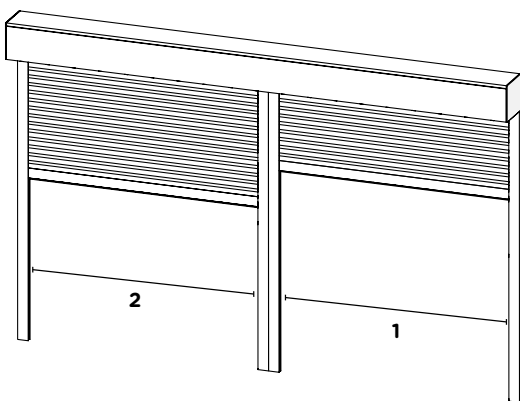
10. DOOR - WINDOW COMBINATIONS

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

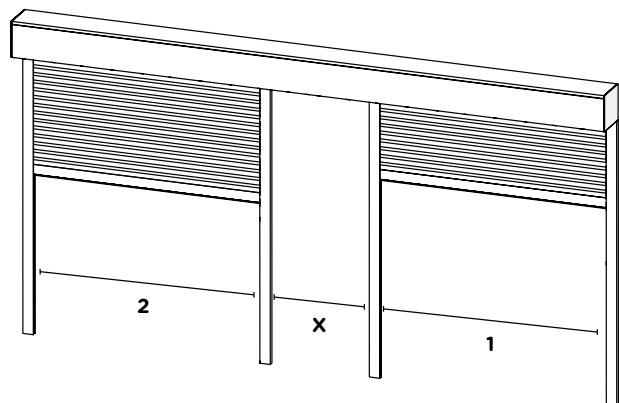


Note:

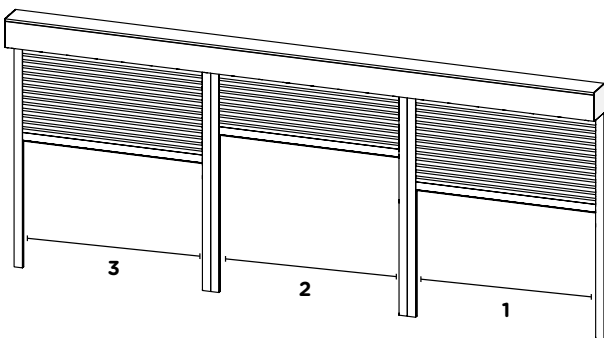
If a 120 - 121 or 118D guide rail is used in the middle, then there cannot be 2 controls in the middle. Also, the Ilmo and Becker motors cannot be specified in this situation.



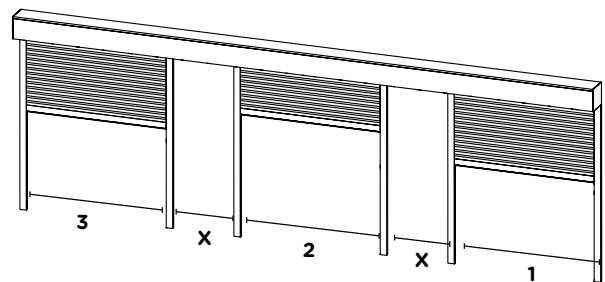
DVC2 (1 box & 2 roller shutters)



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



DVC3 (1 box & 3 roller shutters)



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

11. SUPPLEMENTS

Blackout option A1661

Function: greatly reducing possible light reflection*

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

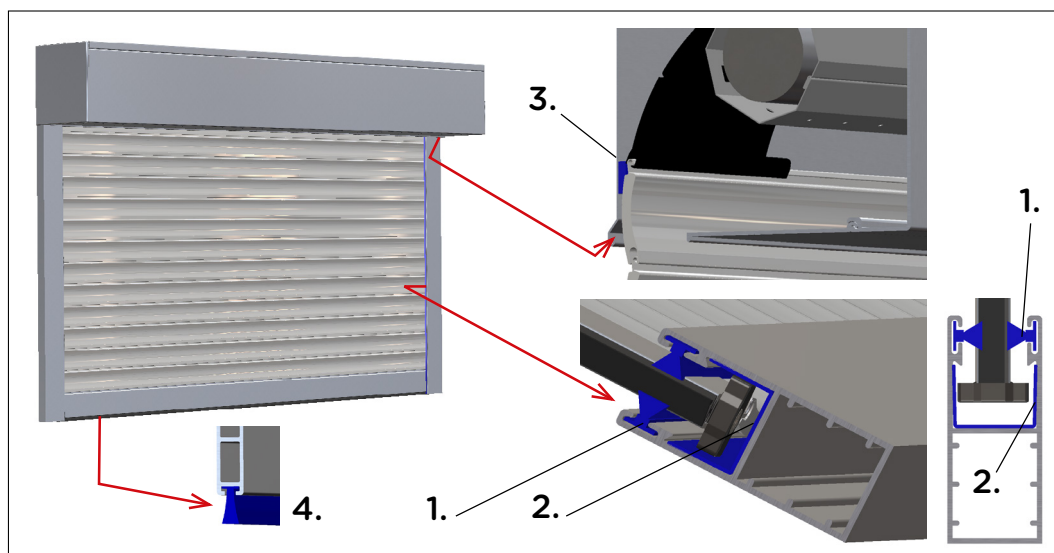


Figure 17:
Darkening Option

Conditions:

- Operation: only possible with motor operation & axle 60
- Slat selection: only with ALU242(S), without daylight openings
- Guides: only with: 118(B), 119(B) & 120

To obtain the most favorable result, please choose:

- 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.

Automatic locking device DVA

- Option A82
- Due to its special design, the DVA system is specially designed to fully block the shutter panel.
- Increases the roll-up diameter (see Table 5)

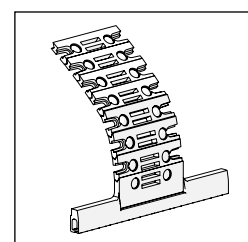


Figure 18:
the DVA switch

Security options

The VR1000 is equipped with an extruded front and base plate as standard. The anti-lift device* is also fitted as standard for Ilmo, Oximo and Becker motors by using rigid connectors between the roller shutter panel and the shaft.

An extra safety option can be added using:

- the reinforced ALU242S slat
- the 135(B) - the (wide) security guide rail
- an extra reinforced bottom lath (option A761: “security bottom lath”).

* The DVA system can also be selected as the anti-lift security system for (other) motors.

Each of these options can be selected separately.

If all options are selected together, a ‘security package’ discount applies (see price list).

Reinforcements

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

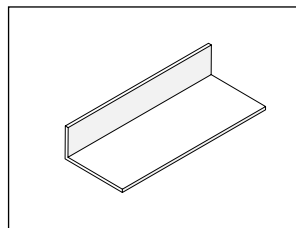


Figure 19:
the L profile

L-window connection profile

- Option: A1609
- dimensions: 20x20mm
- function: closing the gap that is created between the box and the window frame
- only applicable with the 119 (B) & 120 (B) guides
- provided with double-sided tape
- is supplied separately

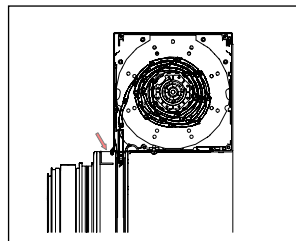
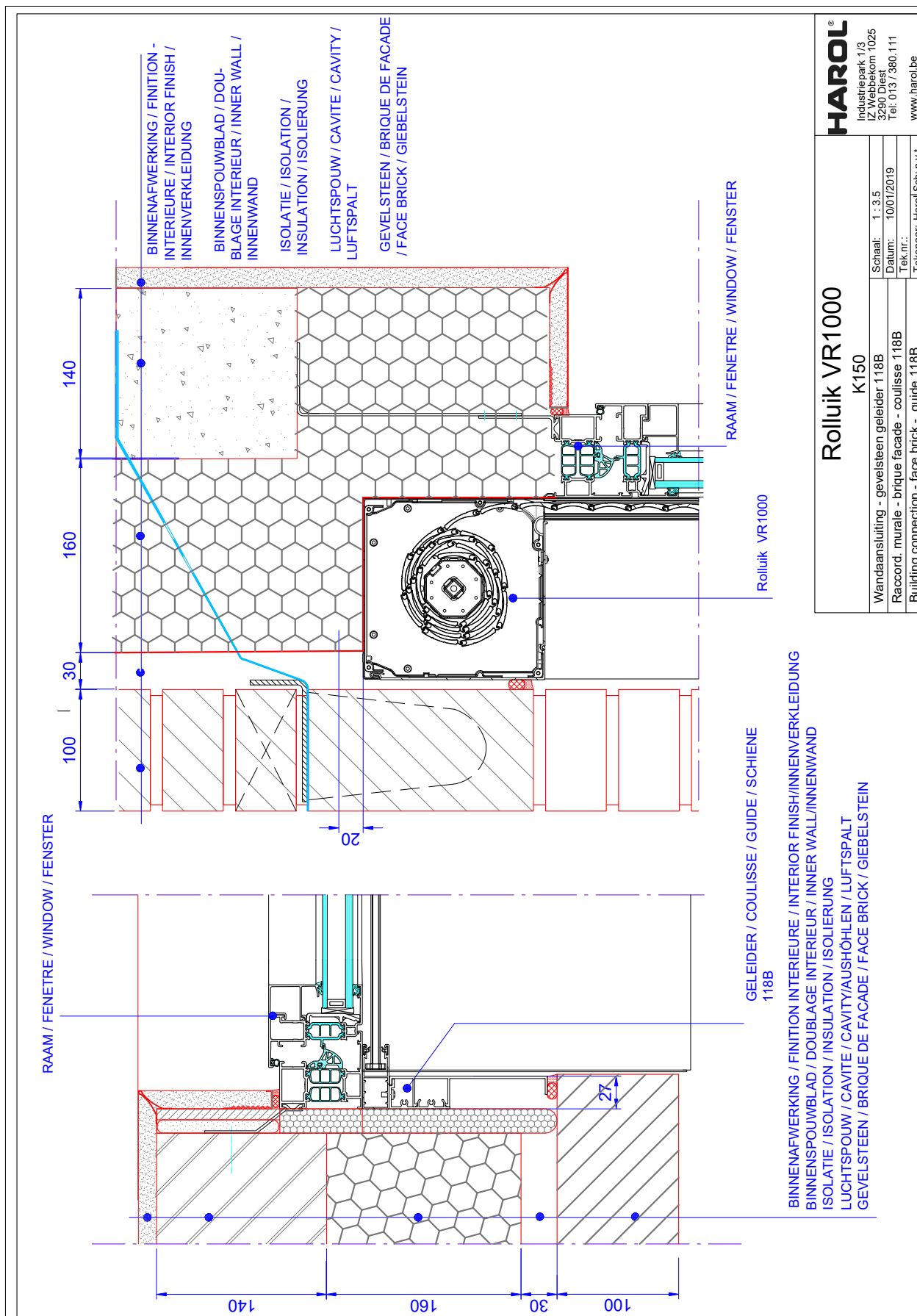


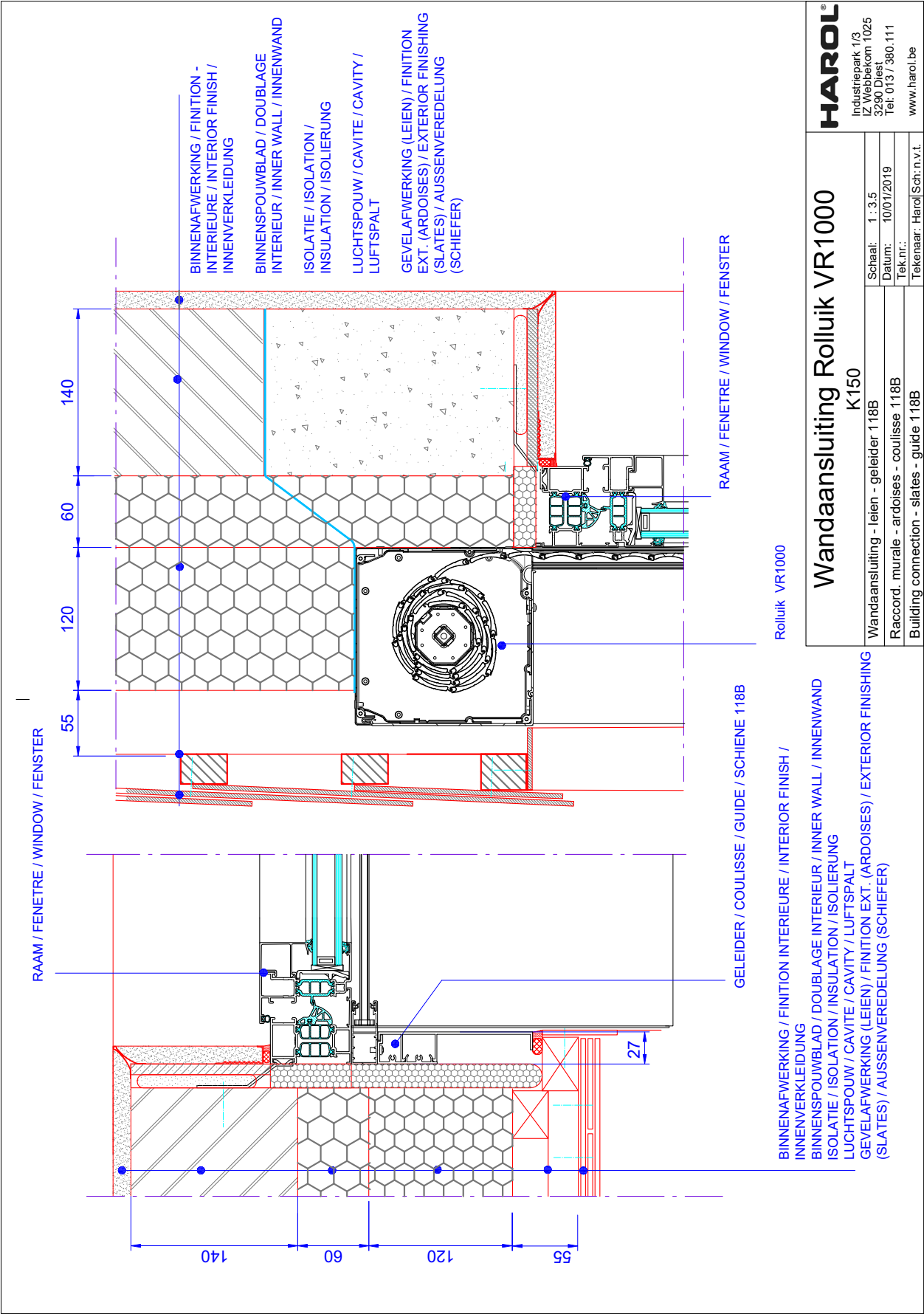
Figure 20:
the L-window connection profile

12. WALL CONNECTIONS

– Wall connection for brickwork



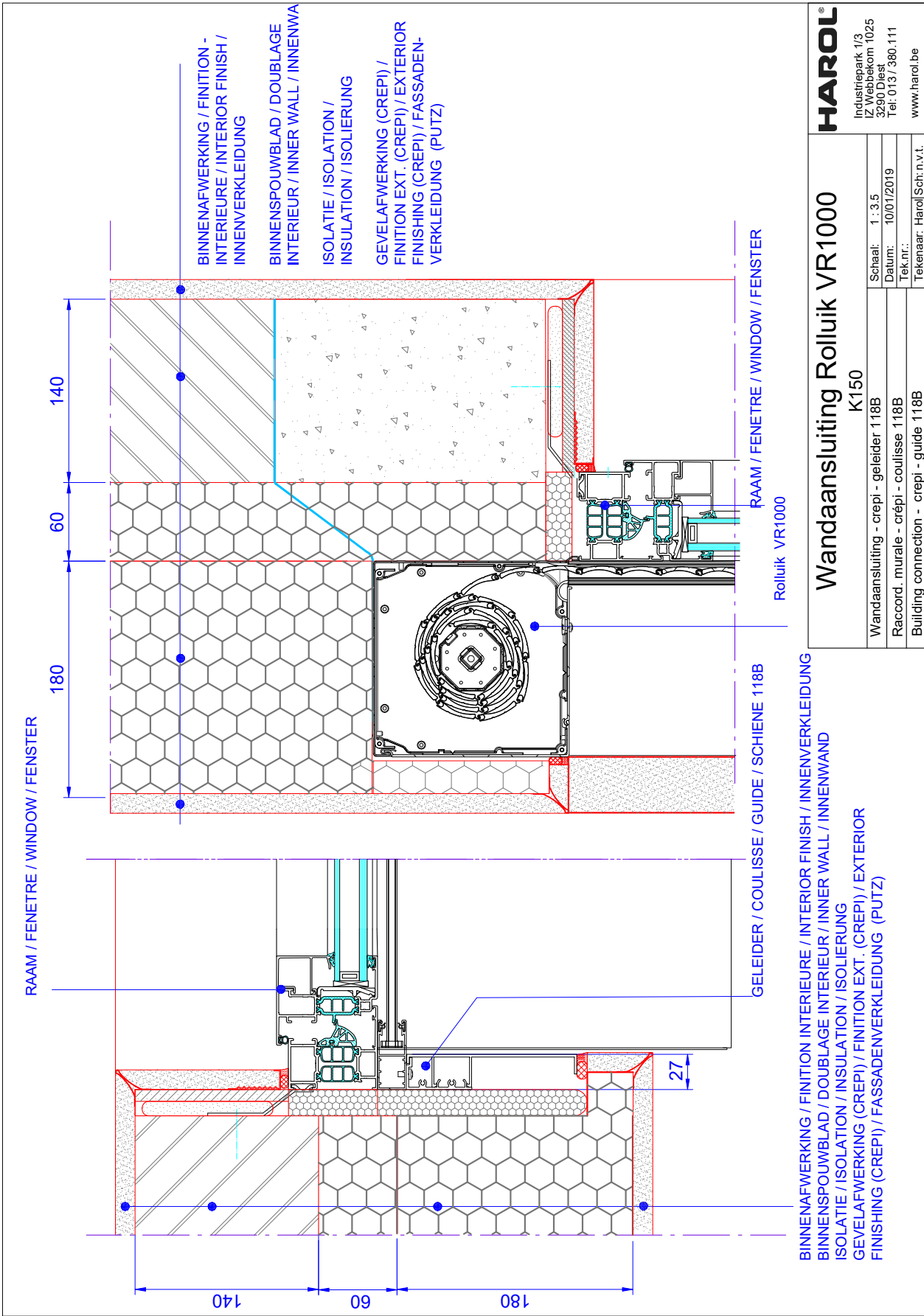
- Wall connection for slate



Wandaansluiting Rolluik VR1000 K150	
Schaal: 1:3.5	
Datum: 10/01/2019	
Tek.nr.:	
Tekenaar: Harol	Sch.n.v.t.

HAROL®
Industriepark 1/3
IZ Webbeke 1025
3290 Diest
Tel: 013 / 380.111
www.harol.be

- Wall connection for plaster



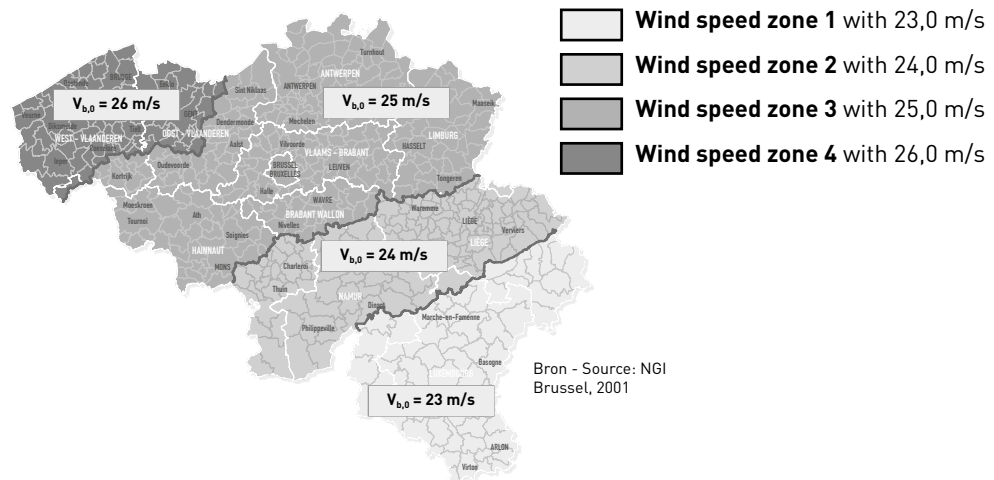
13. WIND RESISTANCE AND OPERATING CLASSES IN ACCORDANCE WITH NBN EN 13659

13.1 Compulsory application since 1 April 2006

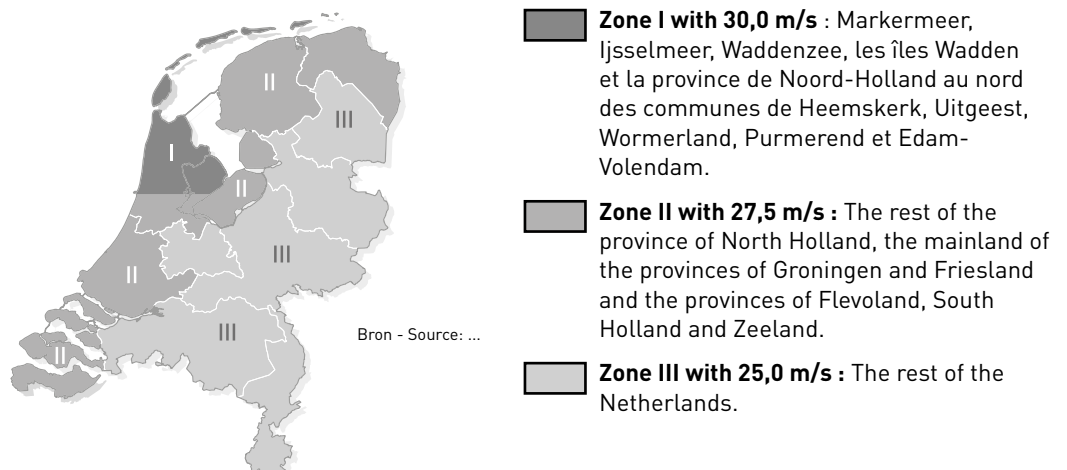
The new NBN EN 13659 standard has been in force since 1 April 2006. In accordance with this standard, from that date onwards roller shutters must carry a CE mark that also shows the wind resistance class. There are standards and guidelines for different countries in order to define which wind resistance class is necessary for which application. For Germany, the German “Bundesverband Rolladen 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!

13.2 Détermination des zones de vitesses de vent ou zones de charges de vent

Belgium



The Netherlands

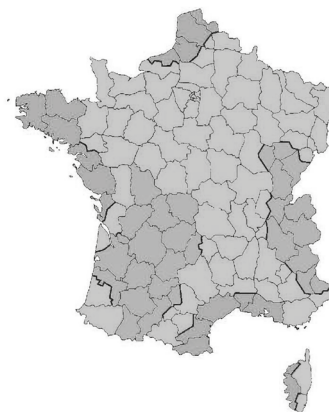


Germany



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

France

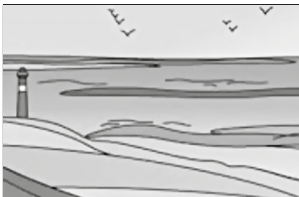
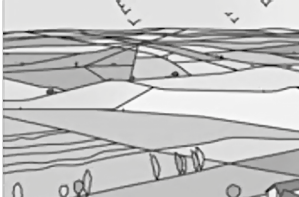


Bron - Source: ...

-  **Wind load zone 1** with 22,5 m/s
-  **Wind load zone 2** with 25,0 m/s
-  **Wind load zone 3** with 27,5 m/s
-  **Wind load zone 4** with 30,0 m/s

-  **Wind load zone 1** with 22,0 m/s
-  **Wind load zone 2** with 24,0 m/s
-  **Wind load zone 3** with 26,0 m/s
-  **Wind load zone 4** with 28,0 m/s

13.3 Definition of the terrain or roughness category

	Terrain category 0 <i>(The most stringent)</i> Sea or coastal area with wind flowing over the open sea.
	Terrain category I Lakes or flat and horizontal area with negligible vegetation and no obstacles.
	Terrain category II 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).
	Terrain category III 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.)
	Terrain category IV <i>(The least stringent)</i> Urban areas where at least 15% of the surface area is covered with buildings with an average height of over 15 metres.

13.4 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 23 m/s	2 24 m/s	3 25 m/s	4 26 m/s	1 23 m/s	2 24 m/s	3 25 m/s	4 26 m/s	1 23 m/s	2 24 m/s	3 25 m/s	4 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 30 m/s	2 27,5 m/s	3 25 m/s	1 30 m/s	2 27,5 m/s	3 25 m/s	1 30 m/s	2 27,5 m/s	3 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 22 m/s	2 24 m/s	3 26 m/s	4 28 m/s	1 22 m/s	2 24 m/s	3 26 m/s	4 28 m/s	1 22 m/s	2 24 m/s	3 26 m/s	4 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 22,5 m/s	2 25,0 m/s	3 27,5 m/s	4 30,0 m/s	1 22,5 m/s	2 25,0 m/s	3 27,5 m/s	4 30,0 m/s	1 22,5 m/s	2 25,0 m/s	3 27,5 m/s	4 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

13.5 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
118(B)/118D/119(B)/120/121/135(B) / 118B	6												5	4	3				2	1				0							
118s/ 118s(B)	6										5	4	3			2	1	0													

PVC37

guide	1000	1100	1200	1300	1400	1500	1600
118(B)/118D/119(B)/120/121/135(B)	3	2	1	0			
118s(B)	3	2	1	0			

MIDI

guide	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
118(B)/118D/119(B)/120/121/135(B)	3	2	1	0											
118s(B)	3	2	1	0											

14. GENERAL REMARKS

- To prevent the rear panel of the box from coming into contact with the slats due to pressure from the façade insulation, we recommend fitting an L-profile to the window to which the cabinet can be attached, if necessary.
- The surfaces of the slats can become slightly marked due to friction between the slats during rolling up and rolling down. This is a natural consequence of normal use of the product and is therefore not covered by the warranty.
- Reflection of small traces of light between closed light slats or between panel and guide rail are inherent properties of the product and cannot be excluded. If the roller shutter must darken as optimally as possible, it is best not to select daylight slats. The slats with a smaller roll-up (ALU237, PVC37) are also more sensitive to light transmission than the larger slats (ALU242, ALU242S and MIDI slats).
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.
- A roller shutter with a width bordering on the maximum dimensions of the selected slat type increases the risk of bending and a less rigid panel.
However, this does not affect the quality of the product.
- It is typical of boxes made from sheet materials that internal tensions (in the muffle kiln) cause a slight deflection of the box.
- All electrical connections must be made in accordance with the legal regulations of the relevant country. Electrical connections and correct operation are the responsibility of the installer.
- Harol does not accept any liability whatsoever for shutter curtains that detach as a result of wind or a storm. The installer must take all necessary precautionary steps to ensure that the product ordered is 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 expertise and cannot be used against us.
- Harol reserves the right to make product changes without prior notice.

15. ORDER FORM

Click on the button below:

[Order form VR1000](#)