

TECHNICAL DATA SHEET

BUILT-IN ROLLER SHUTTERS

art. No. 8426

**ROLLER
SHUTTERS**

**SUN PROTECTION
PROTECTION SOLAIRE**

HAROL
WE BELIEVE IN NATURAL COOLING

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

TABLE OF CONTENTS

1.	FINISHED SIZES	3
2	FITTING OPTIONS	4
3.	SHUTTER CURTAIN	5
4.	BOTTOM LATH & INTERMEDIATE SLAT	6
5.	UPPER SLAT	7
6.	GUIDE RAILS	7
6.1	Option blackout guide	9
7.	OPERATION	10
7.1.	Tape operation	10
7.2.	Gear operation	12
7.3.	Coiled-spring operation	12
7.4.	Electrically operated	13
7.5.	Somfy solar wirefree motor	13
7.6.	Harol Solar motor	15
7.7.	Electric motor connection	16
8.	LOCKING DEVICES	17
9.	OPTIONS	18
10.	GENERAL REMARKS	19
11.	ROLL-UP TABLES FOR BUILT-IN ROLLER SHUTTERS	20
12.	POSITION AND DIMENSIONS DRIVE WHEELS FOR 14 MM TAPE	23
13.	POSITION AND DIMENSIONS DRIVE WHEELS FOR 22 MM TAPE	26
14.	COILED SPRING	27
15.	ISIROLL, ALU252 AND ALU255 SHAFTS	30
16.	MOTOR SELECTION TABLE FOR ROLLER SHUTTERS	31
17.	ASSEMBLY OF THE PRESSURE ROLLERS FOR BUILT-IN ROLLER SHUTTERS	33
18	RAPIDO SYSTEM	34
19.	WIND RESISTANCE AND OPERATING CLASSES ...	35
19.1	Compulsory application since 1 April 2006	35
19.2	Definition of the wind speed zones or wind load zones	35
19.3	Definition of the terrain or roughness category	36
19.4	Installation height	37
19.5	The wind resistance class depending on slats and guide rails	38
20.	ORDER FORM	39

Harol reserves the right to make product changes without prior notice.

1. FINISHED SIZES

Finished width

= curtain size including clamps
 = OD + 2x width of lateral guide - 2x thickness of lateral guide - clearance

*

= WROG - 2x thickness of lateral guide - clearance*

= WROG - 26 mm for Rapido with guide 080, 081 and 082.

* clearance :

- PVC37, MIDI, ALU237, ALU242, ALU242S: 8 mm
- Isiroll, ALU252 : 12 mm

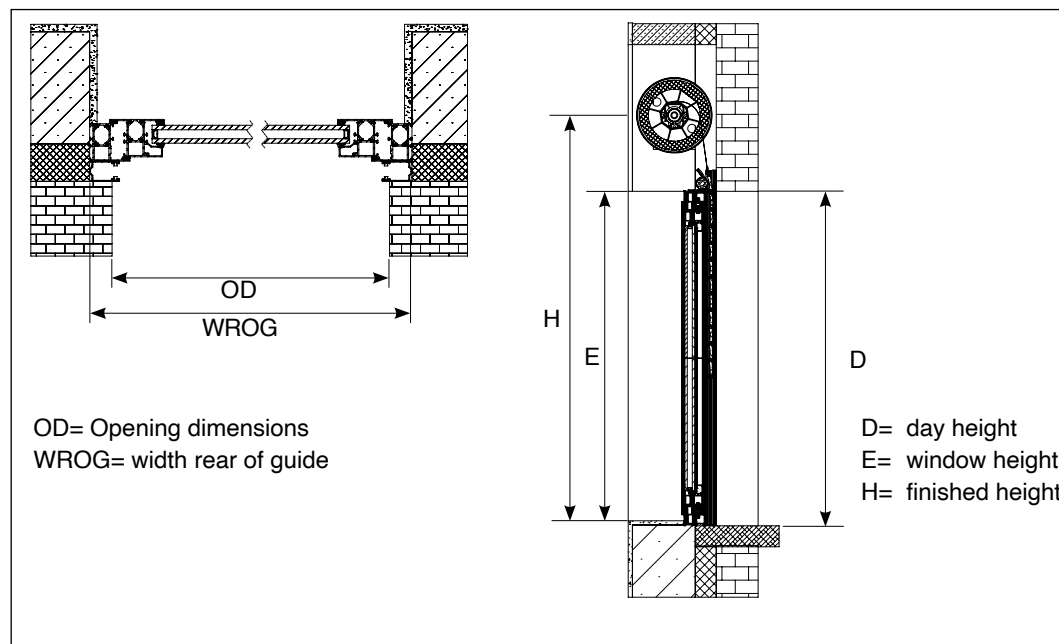


Fig. 1:
 Finished sizes

Finished height

= D + X

Finish A : X = 150 mm for Isiroll, ALU252 and ALU255

Finish B : X = 250 mm for Isiroll, ALU252 and ALU255

Finish C : X = 200 mm for PVC37, Midi, ALU237, ALU242, ALU242S

Rolling up diameters depending on slats and shaft type: see page 20.

The shutter curtains can be finished in 3 ways:

1) Finish A

- applicable to ISIROLL slats , ALU252 and ALU255
- the holes for the bottom lath stops are drilled in the lower lath, 150 mm from the side (note: with option A149 there is the choice not to have pre-drilled holes)
- the shutter curtain is suspended from the shaft using suspending springs
- finished height = clear height + 150 mm

2) Finish B:

- applicable to ISIROLL slats , ALU252 and ALU255
- the holes for the bottom lath stop are not drilled in the bottom lath
- the upper slat is screwed directly onto the shaft
- finished height = clear height + 250 mm

3) Finish C:

- Applicable to PVC37, MIDI, ALU237, ALU242, ALU242S slats
- the holes for the bottom lath stops are drilled in the bottom lath (note: option A149 gives the option not to pre-drill the holes)
- the shutter curtain is suspended from the shaft using suspending springs

finished height = clear height + 200 mm

2 FITTING OPTIONS

Built-in roller shutters are always integrated into the building shell.
The necessary cut-aways must be provided.

These cut-aways are calculated according to:

- choice of lath
- choice of operating systems
- operating side

attachment of roll-up shaft:

A. Traditional (standard): attachment of the shaft bearing on wooden blocks (belongs to shutter box of building shell)

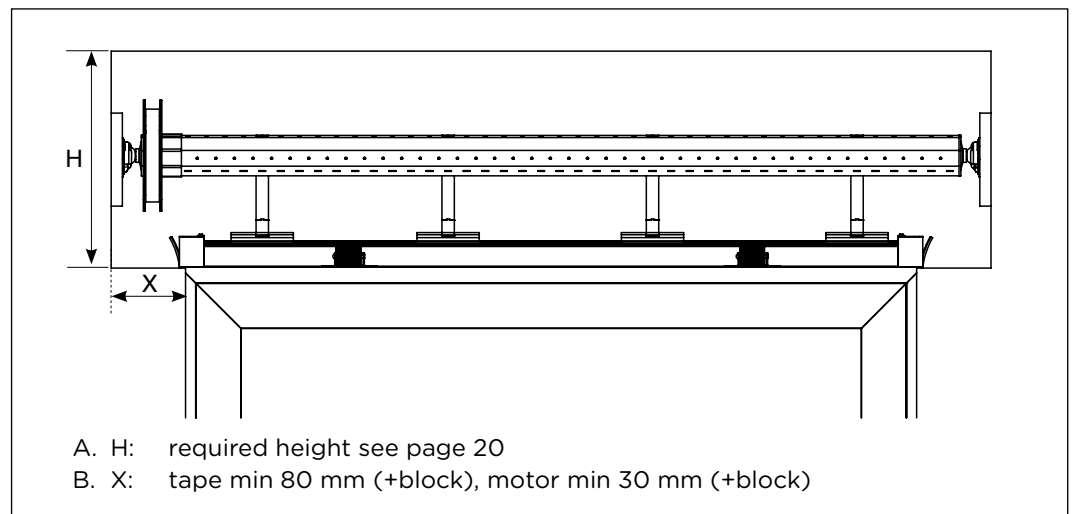


Fig. 2:
Assembly option A

B. Alternatives:
use of metal right-angle bracket (see parts book)

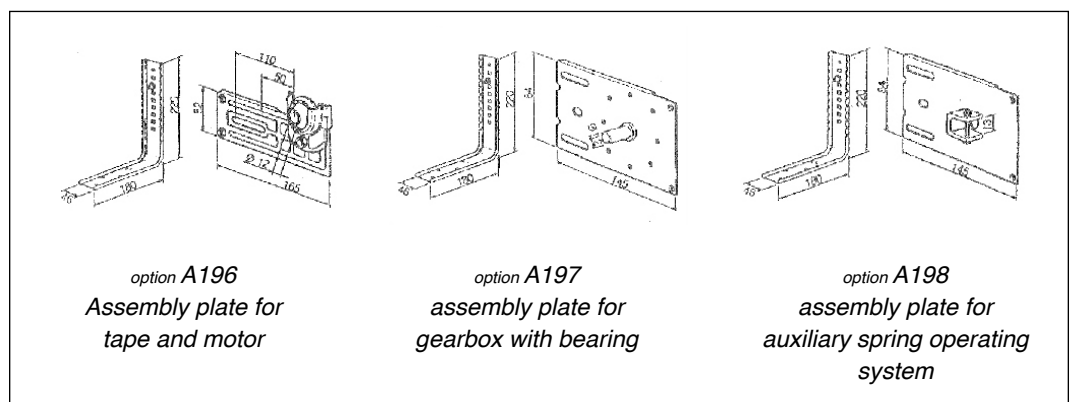


Fig. 3:
Right-angle bracket

C. Rapido: Chapter 18 (see page 34)

3. SHUTTER CURTAIN

Material:

- 3 double-walled plastic slats: PVC37, MIDI and ISIROLL
- 5 double-walled, foam-insulated aluminium slats: ALU237, ALU242, ALU242S, ALU252 and ALU255

Colours: see colour chart

Fitted with as standard:

- side clamps (except in combination with guides 118S and 117S)
- bottom lath stop/s:
 - $W < 800$ mm : 1 bottom lath stop
 - $B \geq 800$ mm: 2 bottom lath stops
 - N.B.: No bottom lath stops are provided for electric roller shutters.
Only 1 bottom lath stop can be ordered for roller shutters of which $B \geq 800$ mm (e.g. for curved centres)
- pressure rollers
- reinforcement for Isiroll wider than 2400 mm (optionally available for Isiroll ≤ 2400 mm)

optional light and ventilation slots:

- 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 top, remainder light and ventilation slots)

The slats with light and ventilation slots are always at the bottom of the lath.

Technical information: see figure 4

	PVC			ALU				
	PVC37	MIDI	ISIROLL	ALU237	ALU242	ALU242S	ALU252	ALU255
slat thickness (A) (mm)	7.8	9	14.5	7.8	9.3	9.3	12.7	13.5
covering height (B) (mm)	37.1	38.5	55	37.0	42.0	42.0	52.2	55.0
total height (C) (mm)	43.2	46.5	68	42.7	48.8	48.8	60	65.5
number of slats per metre of height	27	26	18.2	27	23.8	23.8	19.2	18.2
net weight unreinforced (kg/m ²)	2.86	3.5	4.19	2.80	2.85	4.32	3.1	5.0
net weight reinforced (kg/m ²)	-	-	6.3				-	-
gross weight unreinforced (kg/m ²)	3.71	4.55	5.45	3.64	3.705	5.616	4.03	6.5
gross weight reinforced (kg/m ²)	-	-	8.19				-	-
maximum width (mm)	1600	2400	3000	3000	4000	4000	3800	5000
maximum height (mm)	2400	3000**	3000	3000	3000	3000	3500	3500
maximum area (m ²)	3	5	8	7	9	10	8	13
resistance value ΔR (m ² K/W)	0.19	0.21	0.26	0.16	0.16	0.16	0.16	0.16
resistance value R_{SH} (m ² K/W)	0.065	0.088	0.152	0.03	0.03	0.03	0.03	0.03

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

Fig. 4: technical data slats

Maximum dimensions of the slats were determined from tests with our own guides. We cannot guarantee these dimensions when using our slats with other guides.

4. BOTTOM LATH & INTERMEDIATE SLAT

Bottom lath material: extruded aluminium, enamelled and powder coated

Colours: see colour chart

Provided with:

- rubber seal and 2 bottom lath stops of 37 mm
- Note: no bottom lath stops are used with electric roller shutters.

Optional:

- bottom lath stops 50 mm
- 1 centre bottom lath stop
- built-in locking devices

Applications: see figure 5

Material of intermediate slat: extruded aluminium, enamelled and powder coated

Colours: see colour chart

Supplied as standard: in the same colour as the bottom lath

Positioning : at hand height (± 800 mm)

Various application options

- recessed handles
- cylinder lock

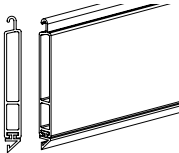
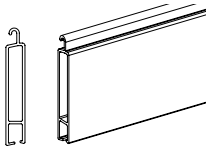
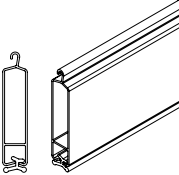
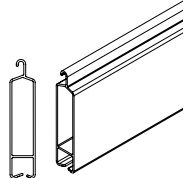
SLAT	BOTTOM LATH	INTERMEDIATE LATH
PVC37, MIDI, ALU237, ALU242 & ALU242S		
Isiroll, ALU252 & ALU255		

Fig. 5:
Bottom laths and
intermediate slats

5. UPPER SLAT

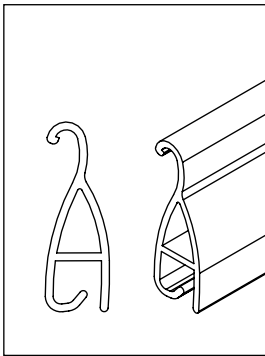


Fig. 6:
upper slat Isiroll

For Isiroll reinforced PVC suspension bar as a connection between the slats and the suspension springs.

6. GUIDE RAILS

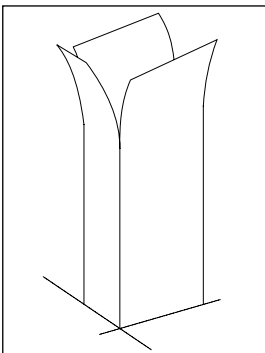


Fig. 7:
Entry guide

Material: extruded aluminium, enamelled and powder-coated

Colours: see colour chart

Available types depending on the type of slat and the type of fixing: see Fig.8

As standard with brushes or joints (with the exception of guide 043). Brushes (bv60) in the guides (118, 117, 118s, 117s, 118d, 119, 120, 080 and 082) are optionally available.

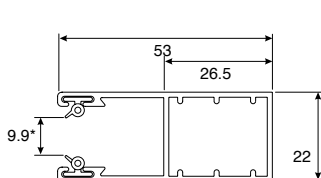
Length of guide:

- Traditional attachment: unless stated otherwise on the order form, the lateral guides are supplied 50 mm longer than the window height. This allows the profiles to be sawn to the correct length at the top when installed and folded over to create a funnel (Fig. 7)
- Rapido suspension: length of lateral guides equal to window height

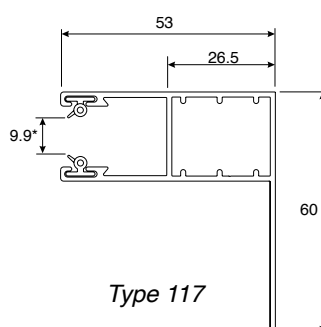
GUIDES FOR STANDARD ASSEMBLY

Slat thickness 8 mm	Type 118 / 117 / 118S / 117S / 118D / 119 / 120 / 080 ** / 082 **
Slat thickness 14.5 mm	Type 043 / 040 / 041 / 045 / 046 / 025 / 081 **

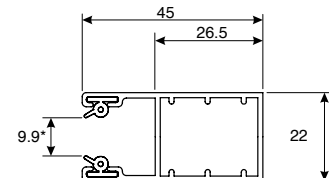
** = guides for assembly with the Rapido system



Type 118

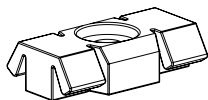
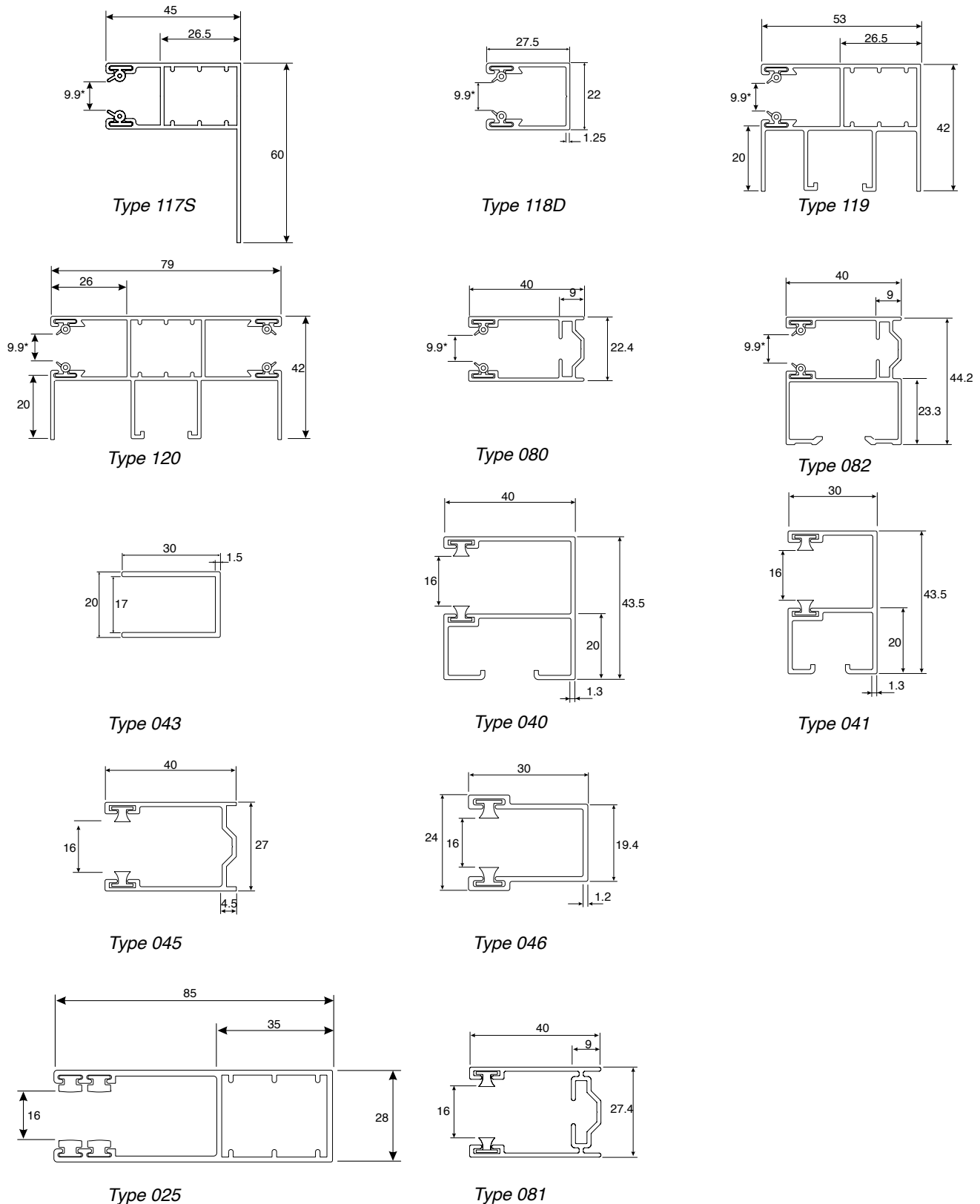


Type 117



Type 118S

* =with narrow slats this opening is 9.2mm



clips for guide 119 and 120

Fig. 8: Guide rails

* = with narrow slats this opening is 9.2mm

6.1 Option blackout guide

Option blackout guide A1662

Function: greatly reducing possible light reflection

- along the guides:
 - with a brush with integrated fin (1)
 - with a dark chamber in the guide opening (2)

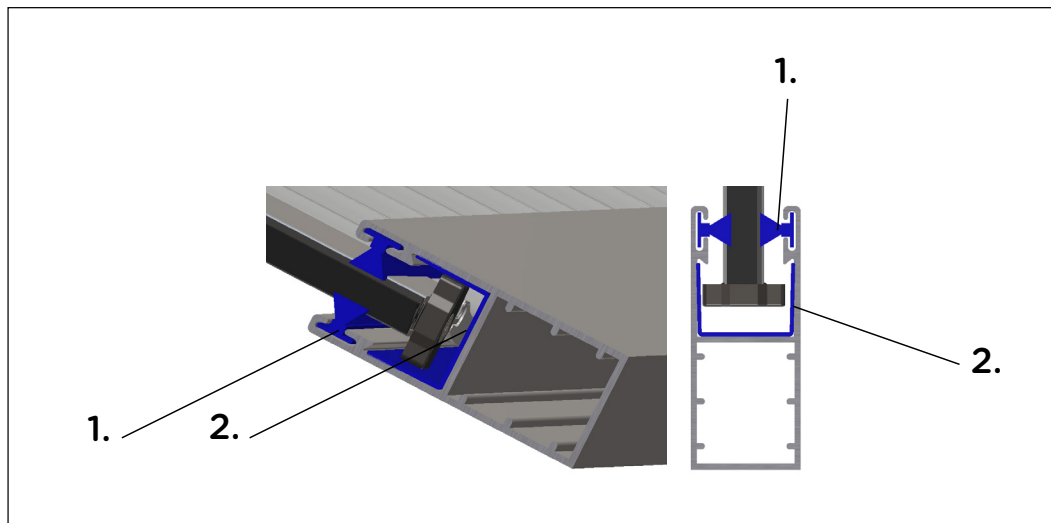


Figure :
Darkening Option

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, 118D & 129

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

7. OPERATION

Different control systems are available: tape 14 mm, tape 22 mm, gearbox, coiled spring operation, motor control and NHB motor

7.1. Tape operation

Tape operation 14 mm

- tape: standard grey
- tape coiler: standard built-in white
- optional (to be specified when ordering):
 - tape and tape coiler in brown
 - built-on tape coilers
 - tape operation with reduction 2/1 or 3/1: for easy control of larger roller shutters (not available with Rapido system)

Note:

not possible with Isiroll, ALU252 and ALU255 slats. use tape coilers as shown in table 1a.

Max. dimensions and max. area of application with Rapido system (see page 34).

Attention when using the Rapido system with built-in tape coilers: check whether the built-in tape coiler can be fitted.

Tape operation 22 mm

- tape: standard white
- tape coiler: standard built-in white
- optional (to be specified when ordering):
 - tape and tape coiler in brown
 - built-on tape coilers
 - tape operation with reduction 2.6/1 or 3.7/1: intended for easy operation of larger roller shutters (not possible with Rapido system)

Note:

Use of tape coilers according to table 1b. Max. dimensions and max. area of application with Rapido system (see page 34).

Attention when using the Rapido system with built-in tape coilers: check whether the built-in tape coiler can be fitted.

TAPE COILER (15 MM TAPE)	TYPE	MAX. HEIGHT PER REDUCTION		
		1:1	2:1	3:1
4 m	built-on	2300	1300	-
6.5 m	built-on	3000	2400	1100
9 m	built-on	-	3000	1900
11 m	built-on	-	-	2500
5 m	built-in	2700	1800	800

Table 1a :

Maximum height (in mm) of the roller shutter per type of tape coiler (15 mm)

TAPE COILER (22 MM TAPE)	TYPE	MAX. HEIGHT PER REDUCTION			WALL RECESS (MM)
		1:1	2,6:1	3,7:1	
4 m	built-on	2500	-	-	-
8 m	built-on	3500	2500	1550	-
5 m	built-in	3000	-	-	170
12 m	built-in	3500	3000	2350	240
15 m	built-in	-	3500	3050	260

Table 1b :

Maximum height (in mm) of the roller shutter per type of tape coiler (22 mm)

		SLATS 8 MM		SLATS 14 MM		
		SHAFT 40	SHAFT 60	SHAFT 60	SHAFT 70	SHAFT 89 *
tape 14	1/1	x	-	-	-	-
	2/1	x	-	-	-	-
	3/1	x	-	-	-	-
tape 14 1/1		-	x	x	-	-
	2.7/1	-	x	x (1)	x (1)	-
	3.7/1	-	x	x (1)	x (1)	-
Crank mech.		x	-	x	-	-
Crank mech. with auxiliary spring		-	x	x	-	-
Coiled spring		-	x	x	-	-
Electric		-	x	x (1)	x (1)	x (1)
Electric NHB		-	x	x (1)	x (1)	x (1)

(1) = depending on dimensions

Note: standard shaft length delivered = B + 150 mm

* not available for the Rapido

Table 2:

Use of roll-up shafts

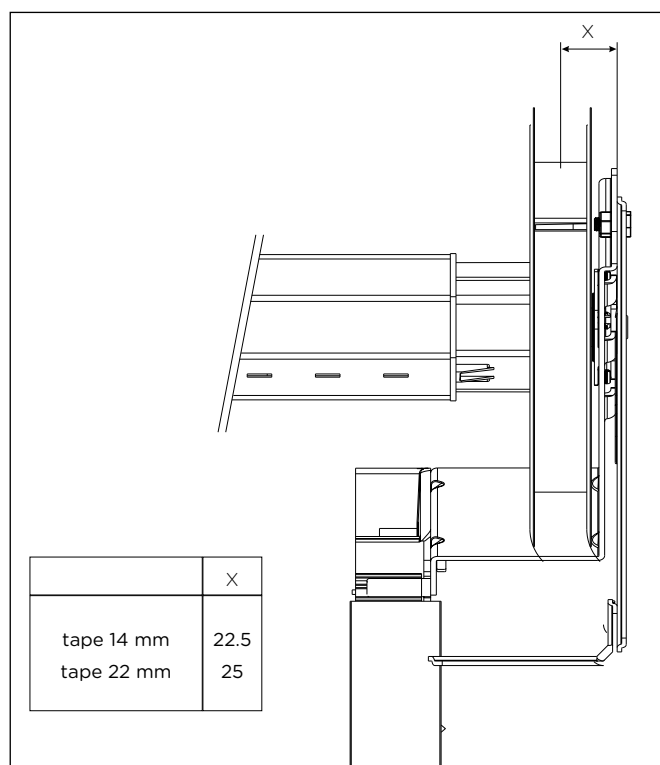


Fig. 9:

Dimensions with tape operation (Rapido system)

Tape guides

- The choice is determined by the space available for attaching the tape guide.
- Supplied as standard:
 - tape 14 mm: tape guide 135
 - tape 22 mm: tape guide 234
- Overview of available tape guides: see Fig. 10

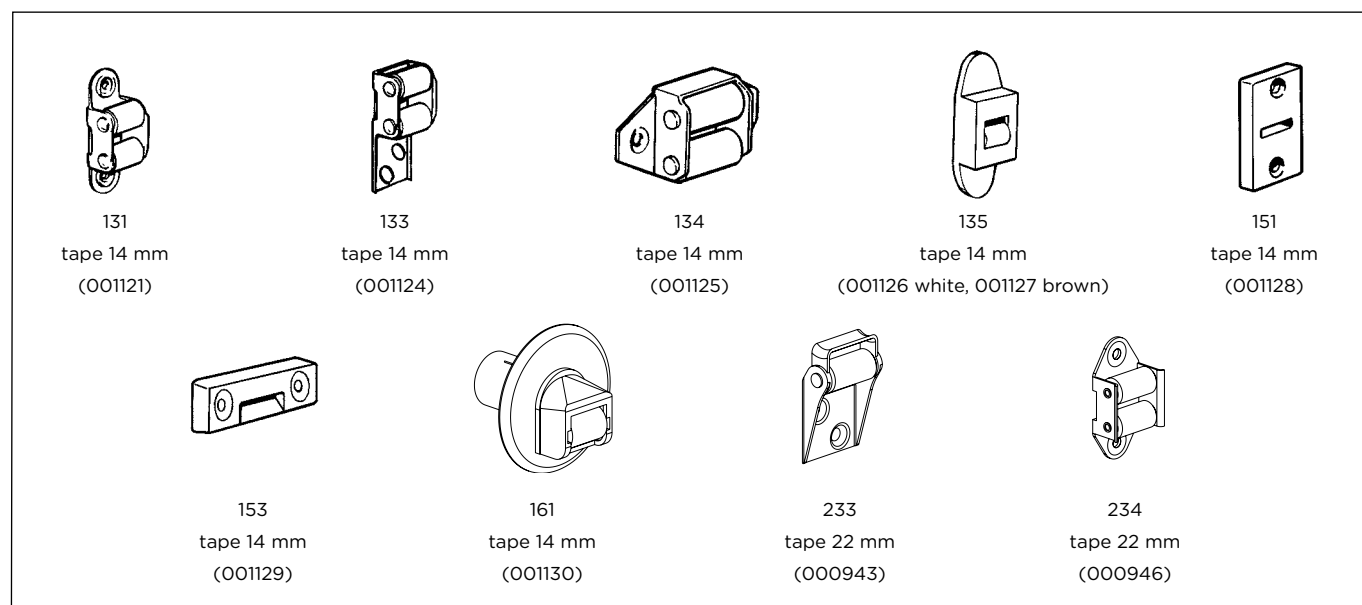


Fig. 10:

Table of tape guides

7.2. Gear operation

Gearbox

- shutter operation using a worm-worm gear mechanism and a winch handle
- assembly of additional spring in roll-up shaft for large dimensions (always 60mm shaft)
- worm-worm mechanism:
 - transmission gear 1:7
 - self breaking
- winch handle:
 - standard:
 - grey
 - winch handle length according to the following table

LENGTH	ROLLER SHUTTER HEIGHT
1500 mm	$0 \leq H \leq 1500 \text{ mm}$
1800 mm	$1500 \leq H \leq 1800 \text{ mm}$
2500 mm	$1800 \text{ mm} \leq H$

Note:

winch handles cannot be shortened.

- optional:
 - detachable crank with rod coupling
 - white winch handle
 - different winch handle lengths (only 1500, 1800 and 2500 mm available!)
- cardan joint:
 - standard:
 - 90° cardan joint with bearing
 - cardan joint length: hexagon 7 mm, L = 500 mm
 - optional:
 - smaller than 45° cardan joint

7.3. Coiled-spring operation

Coiled-spring operation:

- shutter operation using a built-in spring in the roll-up shaft
- must always be used in combination with a locking device
- orbit and pull rod as standard from 2100 mm height, optional for smaller dimensions
- maximum dimensions: see tables page 27

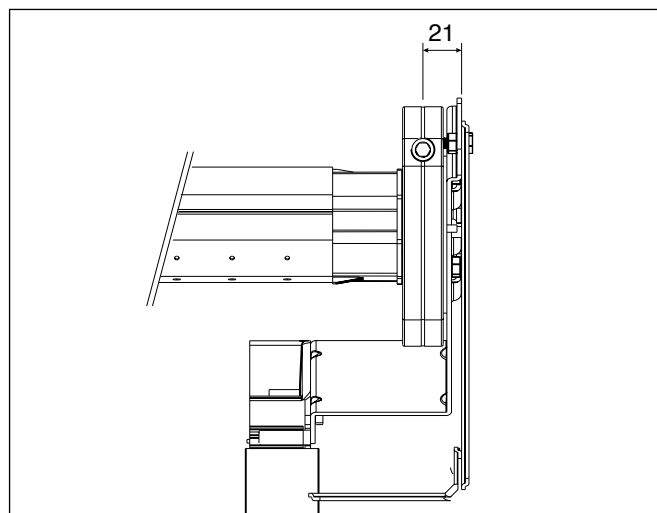


Fig. 11:
Dimensions with crank
handle operation
(Rapido system)

7.4. Electrically operated

Electric operation:

- standard:
 - built-in asynchronous tubular motor (230V) : Altus io
 - 5 m electric cable
 - Amy 1 Channel io – squared wall transmitter
- optional:
 - motors for shaft diameter 40 mm
 - motors with built-in receiver (Silensio RS100 io-motors, LT)
 - electric cable 10 m
(for standard or motor with io)
 - without transmitter
 - for automation: see the Harol Home Automation Catalogue

7.5. Somfy solar wirefree motor

Electric operation using Somfy solar wirefree motor:

concerns an autonomous system on solar energy with all the advantages of the RS100 Silensio motor (IO).

- A4118 RS100 Solar io (6/10Nm) or A4119 RS100 Solar io (15/20Nm)
- the solar panel and battery are always supplied separately
 - a maximum of 1 panel is always installed, regardless of the orientation of the roller shutter.
 - the minimum shaft length = 495mm .
 - if a longer cable (1m) is required for an external battery: art. 066451
- Possible options:
 - A1612/A4122 battery with Aluminum case supplied separately (+/- 45cm cable length)

A1613 5m solar panel extension cable

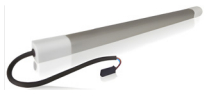
		RS100 SOLAR IO 6/10NM (A4118)	RS100 SOLAR IO 15/20NM (A4119)
MOTOR			
	type of motor	RS100 Silensio io	RS100 Silensio io
	motor power	6 - 10Nm	15 - 20Nm
	diameter	Ø50	Ø50
	speed	6/15 10/12 rpm	15/12 20/12 rpm
SOLAR PANEL			
	panel type	monocrystalline	monocrystalline
	power	2,5W	5,8W
	dimensions	370x60x6mm	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 3:

Main characteristics of SOLAR components

Please note:

- Warranty on the motor, solar panel and battery is 7 years
- After purchase, the roller shutter must be installed within a month, otherwise the battery must be recharged
- 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 ideal solution is for your situation. (App downloadable from AppStore or Google Play).

Electric operation with emergency manual operation

- standard:
 - built-in, asynchronous tubular motor (230 V) with emergency manual operation
 - 3 m electric cable
 - single pole surface mounted switch and plug
 - with winch handle and cardan joint 90°
- optional:
 - electric cable 5 m or 10 m
 - without switch
 - for automation: see the Harol Home Automation Catalogue
- Winch handle:
 - standard:
 - grey
 - winch handle length according to table (see Gearbox)

Note:

winch handles cannot be shortened.

- optional:
 - detachable crank with rod coupling
 - white winch handle
 - different winch handle lengths (only 1500, 1800 and 2500 mm available!)

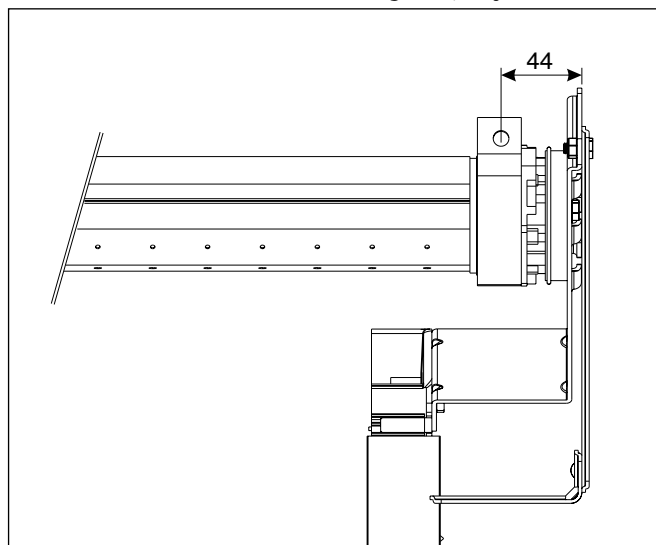


Fig. 12:
Dimensions for
emergency manual
operation (Rapido
system)

7.6. Harol Solar motor

This is a self-contained solar-powered system.

- The solar panel is always supplied separately.
- 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 4: main characteristics of Harol solar motor

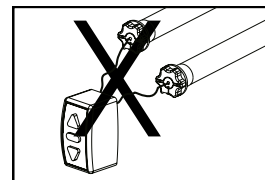
Note:

- 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 voltage: The motor beeps intermittently during movement

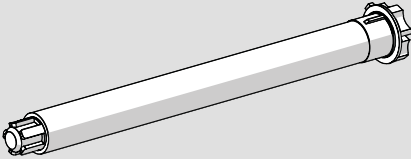
7.7. Electric motor connection

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





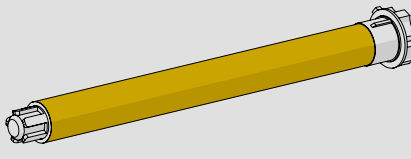


see instruction manual Somfy (included)

www.somfy.com







see instruction manual

www.harol.com



8. LOCKING DEVICES

Bolts

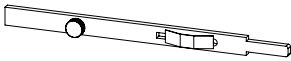
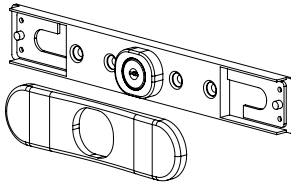
- fitted in the bottom lath
- operation via inside only
- standard: at ± 100 mm from the side of the bottom lath
- custom: measured from the side of the bottom lath to the centre point of the bolt
- not possible with electric operation

Cylinder lock:

- fitted in the bottom lath or in an intermediate slat
- operation via inside and outside
- standard: in the middle of the bottom slat or intermediate slat
- custom: measured from the side of the bottom lath or intermediate slat to the centre point of the cylinder lock
- not possible with electric operation

Fig. 13:

Table of bolts and cylinder locks

LOCKING DEVICES	ASSEMBLY		CONTROLS SIDE		
	BOTTOM LATH	INTERMEDIATE SLAT	INNER	OUTER	
Bolt	x	-	x	-	
Cylinder lock	x	x	x	x	

Automatic locking device DVA:

- is fitted on the shaft instead of suspending springs
- only possible with gearbox and motor operation
- the curtain is automatically blocked when fully lowered
- not possible in combination with ABS system

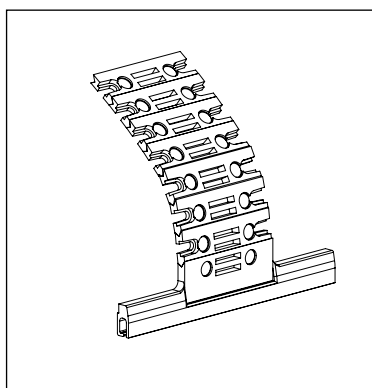


Fig. 14:

Automatic locking device DVA

9. OPTIONS

Motor with built-in receiver (IO) and wall transmitter

- operation of the motor with remote control
- only motor must be powered with 220 V
- optional: without wall transmitter (has the ability to control several motors with 1 transmitter)

Motor with ABS system

- prevents damage to the shutter curtain during downward travel when the bottom lath hits an obstacle
- only applicable to motors up to 30 Nm
- not possible in combination with DVA system
- only useful for motors that do not have HHN.

Intermediate plates 250 or 300 (Fig. 15):

- used as a centre bracket when installing 2 shutters side by side
- equipped with an angle support for assembly against the ceiling or against the lintel
- not possible with Rapido suspension

Aluminium L-profile 20/40/2 (Fig. 17)

- additional reinforcement of the bottom lath

Hand grips:

- Applicable for coiled spring operation:
 - Built-on:
 - fitted on the bottom lath
 - function: touch and operating handle
 - Built-in:
 - mounted in intermediate slat
 - function : operating handle

Pulling up hand grip (Fig. 16):

- only with tape operation 14 mm
- simplifies the operation by a better grip on the tape

Wall box for flush-mounted coils (Fig. 18):

- protects the tape
- makes the tape box draught-free

Coupled curtain:

- only possible with shaft 60 or 70
- shaft length standard = curtain width + 150 mm. Can be adjusted on site.

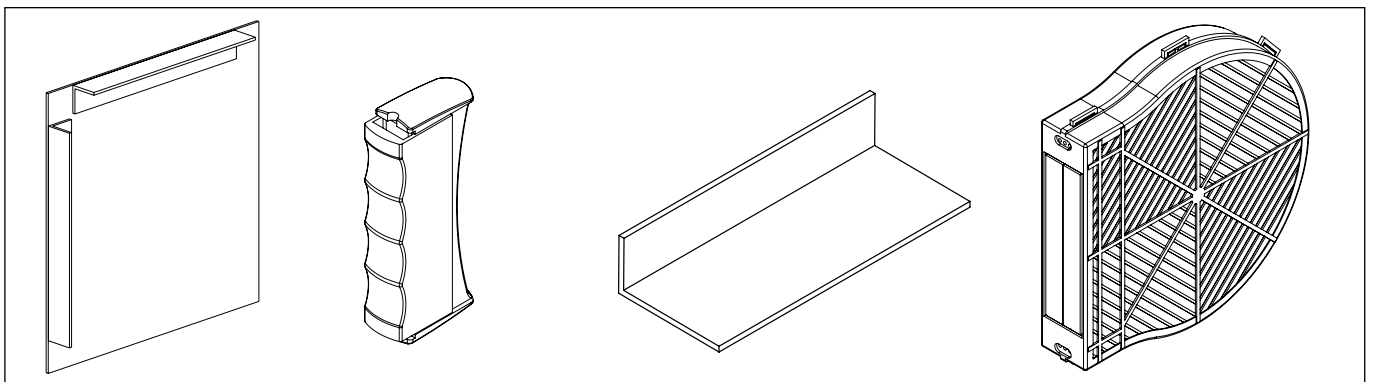


Fig. 15:
Intermediate plate

Fig. 16:
Pulling up hand grip

Fig. 17:
L profile

Fig. 18:
Flush-mounted box

10. GENERAL REMARKS

- It is not advisable to use (dark) PVC roller shutters for sun protection. Due to the large degree of heat absorption which is typical of dark surfaces, there is a large linear expansion which can result in the roller shutter becoming jammed in the guide rails and/or deforming.
- Rolling up and rolling down and the subsequent friction between the slats can cause some slight damage to the slats. This is a natural consequence of normal use of the product and is thus not covered by the warranty.
- All electrical connections must be made in accordance with the legal regulations of the relevant country.
- Electrical connections and proper 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.
- The installer must take all necessary precautionary steps to ensure that the product ordered is suitable for the installation site.
- The specification of the maximum width under wind load in Fig. 6 can be used as an indication, but can under no circumstances be considered a guarantee in case of storm damage.
- 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 is required for an optimal blackout, it is best not to select daylight slats. The slats with a smaller roll-up (ALU237, and PVC37) are also more sensitive to light transmission than the larger slats (ALU242, ALU242S, MIDI, ALU252, ALU255 and ISIROLL). Please note: a roller shutter does not shut out 100% of the light.
- 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.
- 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.

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

11. ROLL-UP TABLES FOR BUILT-IN ROLLER SHUTTERS

Roll-up standard

	PVC37		MIDI		ALU237		ALU242(S)		ISIRO		ALU252			ALU255			
	AS40	AS60	AS40	AS60	AS40	AS60	AS40	AS60	AS60	AS70	AS60	AS70	AS89	AS60	AS70	AS89	
1000	118	114	134	134	118	116	128	128	178	172	130	138	148	170	168	162	1000
1100	118	120	136	136	118	122	132	132	186	192	130	138	148	170	168	180	1100
1200	120	122	136	150	120	126	132	144	186	192	144	148	148	170	168	180	1200
1300	126	122	140	150	128	126	134	144	186	192	144	150	148	170	168	180	1300
1400	126	132	152	150	128	132	144	144	192	192	144	154	158	194	182	180	1400
1500	126	132	152	154	128	132	144	158	208	200	148	154	166	194	188	188	1500
1600	136	132	152	164	136	134	146	158	212	218	158	156	166	194	188	198	1600
1700	136	140	156	164	140	136	154	158	212	218	158	168	166	194	188	198	1700
1800	136	144	166	164	140	144	158	158	212	218	158	170	170	194	190	200	1800
1900	138	144	166	170	140	144	158	174	212	218	162	170	176	214	204	200	1900
2000	150	144	166	180	150	146	158	174	238	220	174	170	180	214	206	202	2000
2100	150	152	170	180	150	148	162	174	238	242	176	176	180	214	206	218	2100
2200	150	156	178	180	150	156	170	174	238	242	176	186	182	214	206	218	2200
2300	150	156	180	180	150	156	170	174	238	242	176	186	190	214	206	218	2300
2400	162	156	180	192	162	158	170	190	238	242	178	186	192	228	224	220	2400
2500			180	194	162	158	172	190	238	242	190	186	194	236	226	220	2500
2600			188	194	162	162	182	190	262	246	192	188	196	236	226	228	2600
2700			194	194	162	166	186	190	262	258	192	188	196	236	226	238	2700
2800			194	194	172	170	186	190	262	268	192	202	204	236	226	238	2800
2900			194	206	174	170	186	202	262	268	196	202	208	236	226	238	2900
3000			194	208	174	170	186	202	262	268	208	202	208	248	246	244	3000
											210	204	208	256	246	244	3100
											210	208	212	256	248	244	3200
											210	218	218	256	248	254	3300
											210	220	224	256	248	254	3400
											220	220	226	256	248	254	3500

Note

These are nett rolling up diameters of the roller shutters. It is necessary to provide a clearance between roller shutter and masonry of at least 20 mm.

Position for Rapido:

	assembly shaft in position 1
	assembly shaft in position 2
	assembly shaft in position 3
	Rapido not possible (roll-up too large or shaft diameter 89)

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

Roll-up with intermediate slat.

	PVC37		MIDI		ALU237		ALU242(S)		ISIRO		ALU252		ALU255		
	AS40	AS60	AS40	AS60	AS40	AS60	AS40	AS60	AS60	AS70	AS60	AS70	AS60	AS70	
1000	124	120	142	142	128	126	138	138	198	192	150	158	190	188	1000
1100	124	126	144	144	128	132	142	142	206	212	150	158	190	188	1100
1200	126	128	144	158	130	136	142	154	206	212	164	168	190	188	1200
1300	132	128	148	158	138	136	144	154	206	212	164	170	190	188	1300
1400	132	138	160	158	138	142	154	154	212	212	164	174	214	202	1400
1500	132	138	160	162	138	142	154	168	228	220	168	174	214	208	1500
1600	142	138	160	172	146	144	156	168	232	238	178	176	214	208	1600
1700	142	146	164	172	150	146	164	168	232	238	178	188	214	208	1700
1800	142	150	174	172	150	154	168	168	232	238	178	190	214	210	1800
1900	144	150	174	178	150	154	168	184	232	238	182	190	234	224	1900
2000	156	150	174	188	160	156	168	184	258	240	194	190	234	226	2000
2100	156	158	178	188	160	158	172	184	258	262	196	196	234	226	2100
2200	156	162	186	188	160	166	180	184	258	262	196	206	234	226	2200
2300	156	162	188	188	160	166	180	184	258	262	196	206	234	226	2300
2400	168	162	188	200	172	168	180	200	258	262	198	206	248	244	2400
2500			188	202	172	168	182	200	258	262	210	206	256	246	2500
2600			196	202	172	172	192	200	282	266	212	208	256	246	2600
2700			202	202	172	176	196	200	282	278	212	208	256	246	2700
2800			202	202	182	180	196	200	282	288	212	222	256	246	2800
2900			202	214	184	180	196	212	282	288	216	222	256	246	2900
3000			202	216	184	180	196	212	282	288	228	222	268	266	3000
											230	224	276	266	3100
											230	228	276	268	3200
											230	238	276	268	3300
											230	240	276	268	3400
											240	240	276	268	3500

Note

These are nett rolling up diameters of the roller shutters. It is necessary to provide a clearance between roller shutter and masonry of at least 20 mm.

Position for Rapido:

	assembly shaft in position 1
	assembly shaft in position 2
	assembly shaft in position 3
	Rapido not possible (roll-up too large or shaft diameter 89)

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

Roll-up with DVA.

	PVC37		MIDI		ALU237		ALU242(S)		ISIRO		ALU252		ALU255		
	AS40	AS60	AS40	AS60	AS40	AS60	AS40	AS60	AS60	AS70	AS60	AS70	AS60	AS70	
1000	116	126	140	144	124	122	134	134	178	180	142	150	182	180	1000
1100	120	132	140	152	124	128	138	138	182	190	142	150	182	180	1100
1200	126	132	156	152	126	132	138	150	190	190	156	160	182	180	1200
1300	126	132	156	154	134	132	140	150	202	206	156	162	182	180	1300
1400	126	142	156	160	134	138	150	150	202	206	156	166	206	194	1400
1500	136	142	156	166	134	138	150	164	202	208	160	166	206	200	1500
1600	136	142	170	166	142	140	152	164	206	210	170	168	206	200	1600
1700	136	142	170	166	146	142	160	164	212	216	170	180	206	200	1700
1800	142	152	170	172	146	150	164	164	224	218	170	182	206	202	1800
1900	146	152	170	178	146	150	164	180	230	234	174	182	226	216	1900
2000	148	156	184	178	156	152	164	180	230	234	186	182	226	218	2000
2100	148	156	1884	178	156	154	168	180	230	234	188	188	226	218	2100
2200	150	160	184	182	156	162	176	180	234	240	188	198	226	218	2200
2300	158	164	1884	188	156	162	176	180	240	244	188	198	226	218	2300
2400	158	166	188	192	168	164	176	196	254	244	190	198	240	236	2400
2500			198	192	168	164	178	196	256	260	202	198	248	238	2500
2600			198	192	168	168	188	196	256	260	204	200	248	238	2600
2700			198	196	168	172	192	196	256	260	204	200	248	238	2700
2800			198	202	178	176	192	196	256	260	204	214	248	238	2800
2900			200	206	180	176	192	208	260	266	208	214	248	238	2900
3000			214	206	180	176	192	208	274	270	220	214	260	258	3000
											222	216	268	258	3100
											222	220	268	260	3200
											222	230	268	260	3300
											222	232	268	260	3400
											232	232	268	260	3500

Note

These are nett rolling up diameters of the roller shutters. It is necessary to provide a clearance between roller shutter and masonry of at least 20 mm.

Position for Rapido:

	assembly shaft in position 1
	assembly shaft in position 2
	assembly shaft in position 3
	Rapido not possible (roll-up too large or shaft diameter 89)

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

12. POSITION AND DIMENSIONS DRIVE WHEELS FOR 14 MM TAPE

PVC37 tape 14 mm

	1000	1100	1200	1300	1400	1500	1600
1000	1	1	1	1	1	1	1
1100	1	1	1	1	1	1	1
1200	1	1	1	1	1	1	1
1300	1	1	1	1	1	1	1
1400	1	1	1	1	1	4	4
1500	1	1	1	1	4	4	4
1600	1	1	1	4	4	4	4
1700	1	1	1	4	4	4	6
1800	2	2	4	4	4	6	6
1900	2	4	4	4	6	6	
2000	4	4	4	4	6	6	
2100	4	4	4	6	6		
2200	4	4	4	6			
2300	4	6	6	6			
2400	4	6	6				

Midi tape 14 mm

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
1000	1	1	1	1	1	1	1	1	4	4	4	4	4	4	4	6
1100	1	1	1	1	1	1	4	4	4	4	6	6	6	6	6	6
1200	2	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6
1300	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6
1400	2	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6
1500	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6
1600	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6
1700	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6
1800	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1900	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2000	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2100	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2200	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2300	6	6	6	6	6	6	6	6	6	6	6	6	6			
2400	6	6	6	6	6	6	6	6	6	6	6	6				
2500	6	6	6	6	6	6	6	6	6	6	6	6				
2600	6	6	6	6	6	6	6	6	6	6	6					
2700	6	6	6	6	6	6	6	6	6	6						
2800	6	6	6	6	6	6	6	6	6							
2900	6	6	6	6	6	6	6	6	6							
3000	6	6	6	6	6	6	6	6								

1	= drive wheel 130/88 in position 01
2	= drive wheel 130/88 in position 02

4	= drive wheel 170/118 in position 02
6	= drive wheel 170/118 in position 02 not comfort zone

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

ALU237 tape 14 mm

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
1000	1	1	1	1	1	1	1	1	1	1	1	1	4	4	4	4	4	4	6	6	6
1100	1	1	1	1	1	1	1	1	1	1	4	4	4	4	4	4	6	6	6	6	6
1200	1	1	1	1	1	1	1	1	4	4	4	4	4	4	6	6	6	6	6	6	6
1300	1	1	1	1	1	1	1	4	4	4	4	4	4	6	6	6	6	6	6	6	6
1400	1	1	1	1	1	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6
1500	1	1	1	1	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6
1600	1	1	1	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6
1700	1	1	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1800	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1900	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2000	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2100	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2200	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2300	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2400	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2500	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2600	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
2700	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6					
2800	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						
2900	6	6	6	6	6	6	6	6	6	6	6	6	6	6							
3000	6	6	6	6	6	6	6	6	6	6	6	6	6								

ALU242 tape 14 mm

	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
1000	1	1	1	1	1	1	1	1	1	1	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1100	1	1	1	1	1	1	1	1	1	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1200	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1300	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1400	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1500	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1600	2	2	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1700	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
1800	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
1900	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2000	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2100	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2200	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2300	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
2400	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2500	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2600	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2700	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2800	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
2900	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
3000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		

1 = drive wheel 130/88 in position 01
2 = drive wheel 130/88 in position 02

4 = drive wheel 170/118 in position 02
6 = drive wheel 170/118 in position 02 not comfort zone

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

ALU242S tape 14 mm

	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
1000	1	1	1	1	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1100	1	1	1	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1200	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
1300	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						
1400	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						
1500	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						
1600	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6												
1700	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6													
1800	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6															
1900	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2100	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2200	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2300	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2400	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2500	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2600	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2700	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2800	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
2900	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																
3000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6																

1 = drive wheel 130/88 in position 01
2 = drive wheel 130/88 in position 02

4 = drive wheel 170/118 in position 02
6 = drive wheel 170/118 in position 02 not comfort zone

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

13. POSITION AND DIMENSIONS DRIVE WHEELS FOR 22 MM TAPE

ISIROLL tape 22 mm

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
1000	2	2	2	2	2	2	2	2	2	2	2	2	2	4	6	6	6	6	6	6	6
1100	2	2	2	2	2	2	2	2	2	2	2	4	4	4	6	6	6	6			
1200	2	2	2	2	2	2	2	2	2	2	4	4	4	4	6	6					
1300	2	2	2	2	2	2	2	2	4	4	4	4	4	6							
1400	2	2	2	2	2	2	4	4	4	4	6	6	6	6							
1500	2	2	2	2	2	4	4	4	6	6	6	6	6	6							
1600	3	3	5	5	5	7	7	7	7	7	7	7	7	7							
1700	3	5	5	5	7	7	7	7	7	7	7	7	7	7							
1800	5	5	5	7	7	7	7	7	7	7	7	7	7	7							
1900	5	5	7	7	7	7	7	7	7	7	7	7	7	7							
2000	5	7	7	7	7	7	7	7	7	7	7	7	7	7							
2100	5	7	7	7	7	7	7	7	7	7	7	7	7								
2200	7	7	7	7	7	7	7	7	7	7	7										
2300	7	7	7	7	7	7	7	7	7	7											
2400	7	7	7	7	7	7	7	7	7	7											
2500	7	7	7	7	7	7	7	7	7												
2600																					
2700																					
2800																					
2900																					
3000																					

ALU252 tape 22 mm

	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	
1000	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	6	6	6	6
1100	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	6	6	6	6	6	6	6
1200	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6
1300	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6
1400	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6
1500	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
1600	2	2	2	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
1700	2	2	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
1800	2	2	2	2	2	2	2	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
1900	2	2	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2000	2	2	2	2	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2100	2	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2200	2	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2300	2	2	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2400	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2500	2	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2600	2	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2700	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2800	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
2900	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3000	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3100	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3200	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3300	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3400	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3500	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	

2	= drive wheel 155/115 in position 02
3	= drive wheel 155/115 in position 03
4	= drive wheel 193/145 in position 02
5	= drive wheel 193/145 in position 03
6	= drive wheel 193/145 in position 02 not comfort zone
7	= drive wheel 193/145 in position 03 not comfort zone

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

14. COILED SPRING

ALU237

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
1000																					
1100																					
1200																					
1300																					
1400																					
1500																					
1600																					
1700																					
1800																					
1900																					
2000																					
2100																					
2200																					
2300																					
2400																					
2500																					
2600																					
2700																					
2800																					
2900																					
3000																					

ALU242

	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
1000																														
1100																														
1200																														
1300																														
1400																														
1500																														
1600																														
1700																														
1800																														
1900																														
2000																														
2100																														
2200																														
2300																														
2400																														
2500																														
2600																														
2700																														
2800																														
2900																														
3000																														

 = assembly shaft in position 01
 = assembly shaft in position 02
 = assembly shaft in position 03

 = coiled spring possible but not with Rapido due to roll-up or weight
 = coiled spring not possible

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

ALU242S

	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
1000																														
1100																														
1200																														
1300																														
1400																														
1500																														
1600																														
1700																														
1800																														
1900																														
2000																														
2100																														
2200																														
2300																														
2400																														
2500																														
2600																														
2700																														
2800																														
2900																														
3000																														

ALU252

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
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																					

 = assembly shaft in position 01
 = assembly shaft in position 02
 = assembly shaft in position 03

 = coiled spring possible but not with Rapido due to roll-up or weight
 = coiled spring not possible

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

PVC37

	1000	1100	1200	1300	1400	1500	1600
1000							
1100							
1200							
1300							
1400							
1500							
1600							
1700							
1800							
1900							
2000							
2100							
2200							
2300							
2400							

MIDI

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
1000															
1100															
1200															
1300															
1400															
1500															
1600															
1700															
1800															
1900															
2000															
2100															
2200															
2300															
2400															
2500															
2600															
2700															
2800															
2900															
3000															

ISIROLL

	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
1000																					
1100																					
1200																					
1300																					
1400																					
1500																					
1600																					
1700																					
1800																					
1900																					
2000																					
2100																					
2200																					
2300																					
2400																					
2500																					
2600																					
2700																					
2800																					
2900																					
3000																					

- = assembly shaft in position 01
- = assembly shaft in position 02
- = assembly shaft in position 03
- = coiled spring possible but not with Rapido
- = coiled spring not possible

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

15. ISIROLL, ALU252 AND ALU255 SHAFTS

ISIROLL

[illegible]

ALU252

[illegible]

ALU255

[illegible]

 = assembly shaft in position 02
 = assembly shaft in position 03
 = possible but not with Rapido because of roll-up or weight

16. MOTOR SELECTION TABLE FOR ROLLER SHUTTERS

How to use this table?

In Table 1, read the value in terms of height, slat and shaft type.

Multiply this value by the width of the roller shutter in metres.

Find the required motor in table 2.

		ALUMINIUM SLATS									PVC SLATS				
		ALU237	ALU242	ALU242S	ALU252			ALU255			PVC37	MIDI	ISIROLL	ISIROLL STRENGTHENED	
		Ø 60	Ø 60	Ø 60	Ø 60	Ø 70	Ø 89	Ø 60	Ø 70	Ø 89	Ø 60	Ø 60	Ø 60	Ø 60	Ø 70
		Ø 60	Ø 60	Ø 60	Ø 60	Ø 70	Ø 89	Ø 60	Ø 70	Ø 89	Ø 60	Ø 60	Ø 60	Ø 60	Ø 70
Finished height / Hauteur finie	1000	1.56	1.72	2.45	1.86	2.04	2.23	3.53	3.59	3.59	1.55	1.91	2.77	3.90	4.12
	1100	1.72	1.85	2.64	2.03	2.23	2.44	3.34	3.71	4.27	1.74	2.22	2.90	4.10	4.75
	1200	1.87	2.04	2.93	2.11	2.33	2.60	3.50	3.89	4.47	1.80	2.36	3.17	4.50	5.21
	1300	1.97	2.17	3.12	2.19	2.42	2.70	4.17	4.24	4.73	2.04	2.49	3.46	4.94	5.67
	1400	2.31	2.36	3.41	2.46	2.60	2.90	4.21	4.74	5.20	2.38	2.78	3.97	5.68	6.81
	1500	2.47	2.88	4.18	3.00	2.89	3.10	4.53	5.11	5.60	2.50	2.98	4.25	6.11	7.32
	1600	2.58	3.03	4.41	3.19	3.08	3.30	5.47	5.91	6.00	2.61	3.38	5.39	7.78	7.83
	1700	2.81	3.25	4.74	3.33	3.56	3.68	5.65	6.11	6.20	2.78	3.53	5.56	8.03	8.09
	1800	2.97	3.40	4.97	3.58	3.90	4.08	7.08	6.79	6.30	3.00	3.76	6.07	8.78	8.60
	1900	3.09	3.62	5.31	3.78	4.11	4.31	7.61	7.71	7.61	3.18	4.06	6.60	9.57	9.18
	2000	3.26	3.77	5.53	3.90	4.25	4.67	8.04	8.15	8.04	3.35	4.22	6.96	10.11	9.69
	2100	3.43	3.92	5.75	4.02	4.46	4.82	8.47	8.24	9.05	3.52	4.61	7.31	10.64	10.21
	2200	3.81	4.14	6.09	4.21	4.67	5.05	8.30	8.79	9.39	3.64	4.77	7.49	10.91	10.46
	2300	4.07	4.29	6.31	4.72	4.96	5.28	8.51	9.00	9.61	4.03	5.19	8.06	11.76	10.98
	2400	4.26	4.90	7.22	5.42	5.17	5.42	8.39	9.30	9.81	4.14	5.44	8.54	12.48	12.15
	2500	4.44	5.14	7.59	5.53	5.27	5.53	8.77	9.72	10.26		5.90	8.91	13.04	12.69
	2600	4.57	5.30	7.83	5.75	5.75	5.75	9.72	10.28	11.12		6.16	10.08	14.76	13.24
	2700	4.92	5.55	8.21	5.97	5.97	5.97	11.44	11.58	11.44		6.33	10.48	15.36	14.53
	2800	5.11	5.71	8.45	6.20	6.39	6.58	11.67	11.82	11.67		6.59	10.68	15.67	14.81
	2900	5.31	5.88	8.70	6.32	6.81	7.11	13.21	12.59	11.50		7.02	11.09	16.27	15.39
	3000	5.43	6.12	9.07	6.54	7.05	7.36	13.71	13.06	11.93		7.37	11.49	16.88	15.96
	3100				6.55	7.18	7.81	14.04	14.04	13.54			11.89	17.49	16.53
	3200				6.87	7.30	8.07	12.80	14.18	15.05			12.45	18.31	18.75
	3300				7.08	7.53	8.32	13.23	14.66	15.55			12.65	18.62	19.07
	3400				8.00	7.88	8.57	14.17	14.72	16.35			13.06	19.23	20.27
	3500				8.59	8.35	8.59	14.63	15.19	16.88			13.47	19.85	20.92

Table 5:

Required torque per metre width in terms of height, slat and shaft type

Example:

ALU242 Height 1850 Width 2270

Which LT50 motor to choose?

1) In table 1 you will find value 3.40

2) Multiply by the width in metres: $3.40 \times 2.27 = 7.72$

3) From table 2 choose the Jet 10/17

The values in the table above may, in some cases, deviate minimally from the values calculated by the technical logic for finished products. However, this does not affect the perfect functioning of the shutter in any way.

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

SERIES	TYPE		ART.NO.	SERIES	TYPE		ART.NO.
LS40	Aries	4	8142	Altus 50 io	Altus 50RS io 6	6	051375
	Aries short	4	24629		Altus 50RS io 10	10	051376
	Mars	9	21521		Altus 50RS io 20	20	051377
LT50	Ariane	6	14982		Altus 50RS io 30	30	051378
	Jet	10	14978		Altus 50RS io 40	40	051379
	Atlas	15	14755		Altus 50RS io 50	50	051380
	Meteor	20	14979	Altus 60 io	Altus 60 io 55	55	051381
	Gemini	25	14856		Altus 60 io 70	70	051382
	Apollo	35	14983		Altus 60 io 85	85	051383
	Mariner	40	14984		Altus 60 io 100	100	051384
	Vectran	50	26827		Altus 60 io 120	120	051385
RDO 50 CSI	RDO 50 CSI	20	20557	Solus 2PA	Solus 2PA 6	6	42210
	RDO 50 CSI	40	20558		Solus 2PA 10	10	38253
Oximo io	Oximo 6	6	46481		Solus 2PA 20	20	42212
	Oximo 10	10	46482		Solus 2PA 30	30	42910
	Oximo 15	15	46483		Solus 2PA 40	40	42911
	Oximo 20	20	46484	Ilmo S WT	Ilmo 6/17	6	46227
	Oximo 30	30	46485	Oximo S io	Oximo 50S io 6/17	6	48897
	Oximo 40	40	46486	Somfy RDO 60 CSI	RDO 60 CSI 80/12	80	22034
Oximo WT	Oximo WT 6	6	40567		RDO 60 CSI 100/12	100	22036
	Oximo WT 10	10	40568		RDO 60 CSI 120/12	120	32869
	Oximo WT 15	15	40569	Somfy LT60	Vega 60/12	60	12835
	Oximo WT 20	20	40570		Sirius 80/12	80	12836
	Oximo WT 30	30	40571		Titan 100/12	100	12837
	Oximo WT 40	40	40572		Taurus 120/12	120	32708
RS100 io Solar	RS100 io Solar 3 Nm	3	068153	Silensio RS100 io	RS100 6	6	62934
	RS100 io Solar 6 Nm	6	068154		RS100 10	10	62935
	RS100 io Solar 10 Nm	10	068155		RS100 15	15	62936
	RS100 io Solar 15 Nm	15	068156		RS100 20	20	62937

Table 6:
Maximum torque (Nm)

Wooden shutters / Volets en bois

Formula for calculating the required torque
Width (m) x Height (m) x Weight (kg/m²) x
shaft diameter (mm) / 100
Safety margin used = 20%

Determining the shaft diameter

W <= 2 m	shaft Ø 60
2 m < W <= 2,7 m	shaft Ø 70
2,7 m < W <= 4 m	shaft Ø 89
4 m < W	upon request

Safety margin for the motors is taken into account in table 1

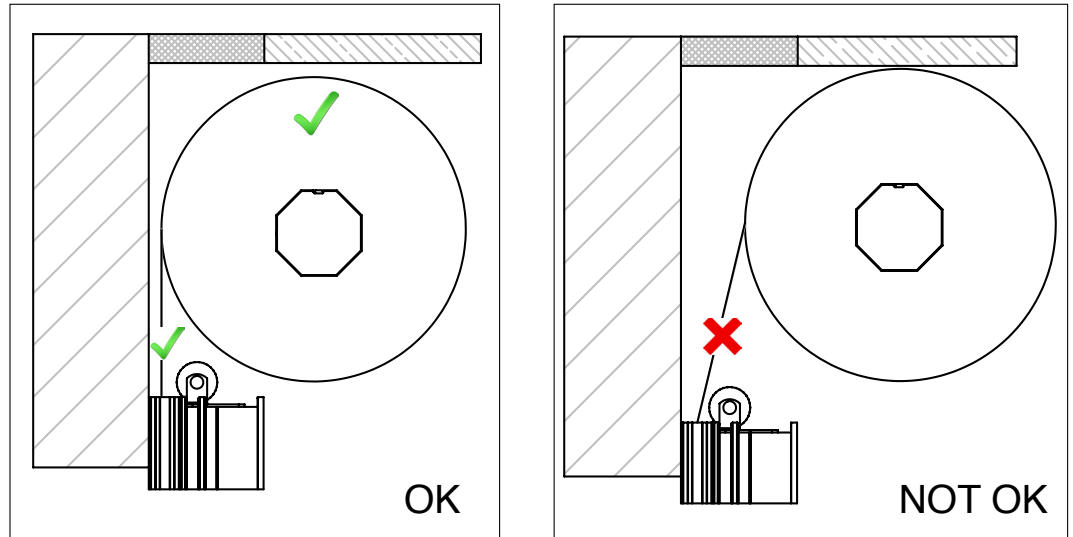
Consequently, the safety margin applied to the motors is not visible in table 2.

17. ASSEMBLY OF THE PRESSURE ROLLERS FOR BUILT-IN ROLLER SHUTTERS

1. Position of the shaft for built-in roller shutters

- When fully rolled up, the curtain should unwind almost vertically. If this is not the case, then the shaft has been fitted too far inwards.
- The distance between the curtain in its fully rolled-up state and the top edge of the roll-up compartment must be at least 10 mm.

Fig. 19:
Rolled up state of
the curtain



2. Position of the pressure rollers for built-in shutters

- Position:
 - The front side of the rollers is flush with the 1st chamber of the sealing profile. Never any further!
- Quantity:
 - One pressure roller is provided per additional metre:
 - Roller shutter $\leq 1000\text{mm}$ = 1 pressure roller
 - From 1001mm = 2 pressure rollers
 - Roller shutter $\leq 2000\text{mm}$ = 2 pressure rollers
 - From 2001mm = 3 pressure rollers

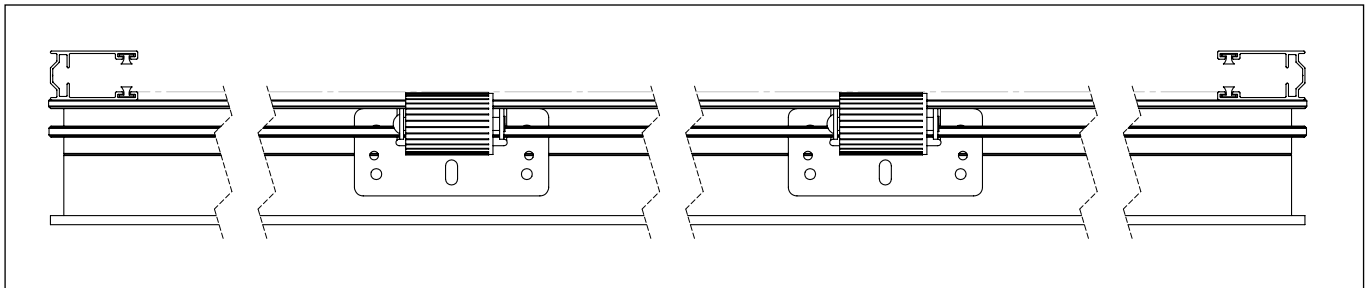


Fig. 20:
Pressure rollers

18 RAPIDO SYSTEM

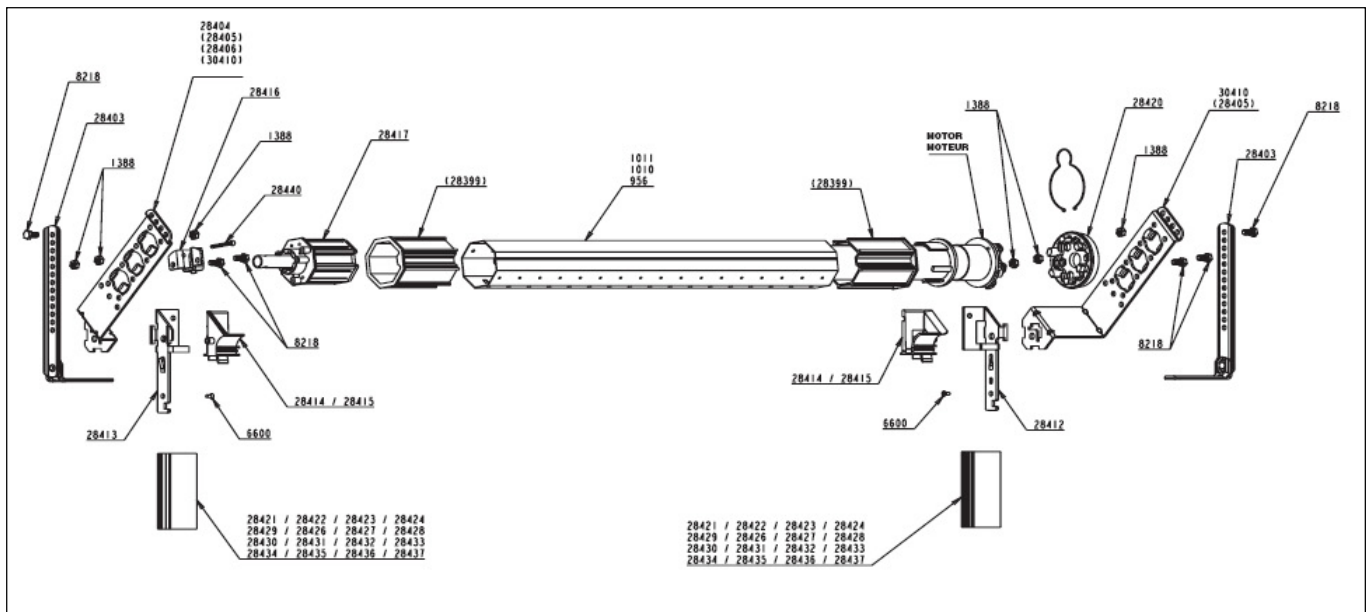


Fig. 21: Rapido system

- attachment of the shaft bearing on special bearing support
- attachment of the bearing support in the guide using an assembly support
- attachment of the assembly support in the guide using a screw or by bending the guide
- maximum rolling up diameter of the roller shutter is 260 mm
- maximum roller shutter weight: 25 kg gross
- available bearing supports: see Fig. 22b
- the bearing support has 3 assembly positions: the position used depends on the height of the roller shutter and its operation:
 - roll-up tables: see page 20

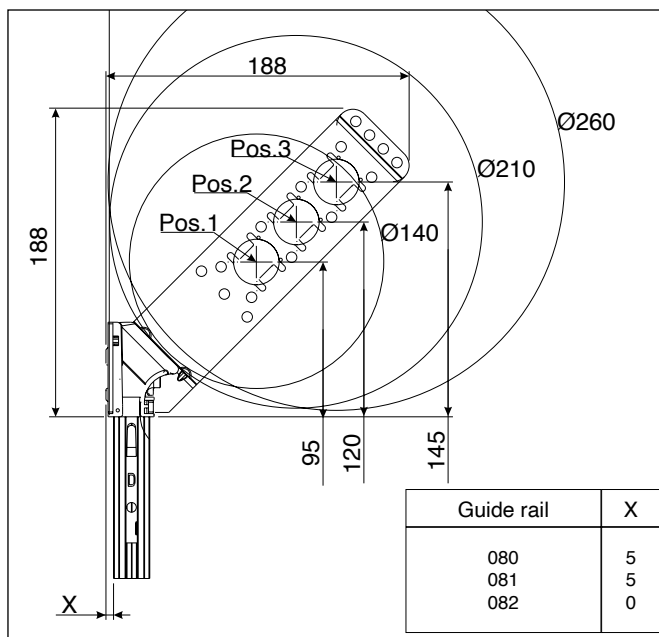


Fig. 22a:
Maximum rolling up diameters Rapido system

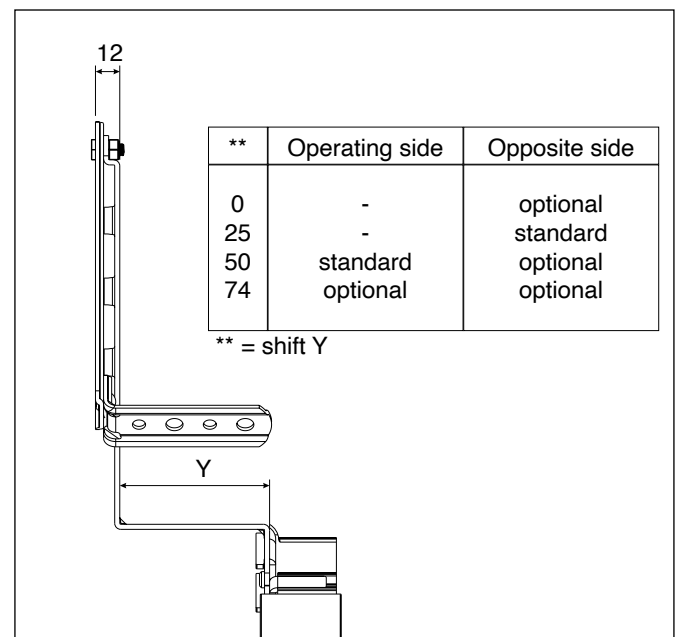


Fig. 22b:
Table of bearing supports Rapido system

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

19.1 Compulsory application since 1 April 2006

The new NBN EN 13659 standard has been in force since 1 April 2006. In compliance with this standard, from this date onwards, the 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.

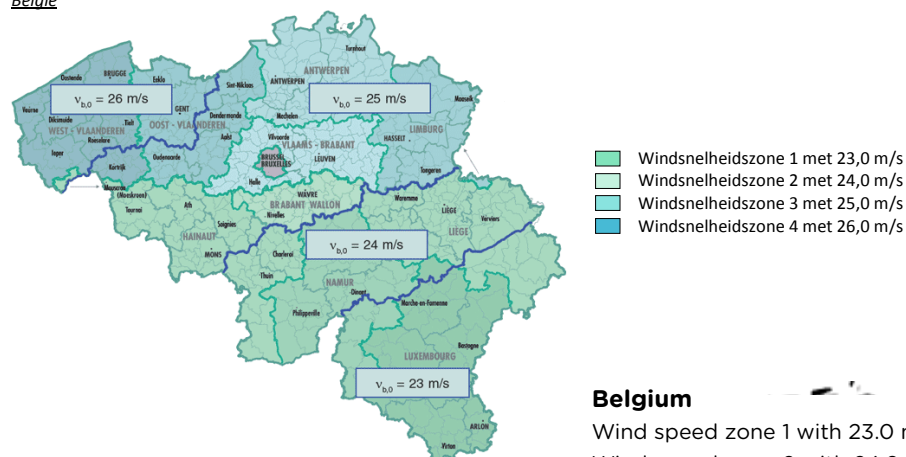
For Germany, the German “Bundesverband Rolladen und Sonnenschutz” have commissioned the development of an IFT guideline entitled “Application advice for external seals”. This guideline (DIN 1055-4:2005-3) divides the territory of Germany into wind speed or wind load zones and terrain categories. In this way, the applicable wind speed zone and terrain category can be derived from the location of the building. The installation height of the seals 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!

19.2 Definition of the wind speed zones or wind load zones

België



Belgium

Wind speed zone 1 with 23.0 m/s
Wind speed zone 2 with 24.0 m/s
Wind speed zone 3 with 25.0 m/s
Wind speed zone 4 with 26.0 m/s

Nederland

- Zone I met 30,0 m/s** : Markermeer, IJsselmeer, Waddenzee, Waddeneilanden en de provincie Noord-Holland ten noorden van de gemeentes Heemskerk, Uitgeest, Wormerland, Purmerend en Edam-Volendam.
- Zone II met 27,5 m/s** : Het resterende deel van de provincie Noord-Holland, het vasteland van de provincies Groningen en Friesland en de provincies Flevoland, Zuid-Holland en Zeeland.
- Zone III met 25,0 m/s** : Het resterende deel van Nederland.

The Netherlands

Zone I with 30.0 m/s: Markermeer, IJsselmeer, Waddenzee, the West Frisian Islands and the province of North Holland north of the municipalities of Heemskerk, Uitgeest, Wormerland, Purmerend and Edam-Volendam.

Zone II with 27.5 m/s: The rest of the province of North Holland, the mainland of the provinces of Groningen and Friesland and the provinces of Flevoland, South Holland and Zeeland.

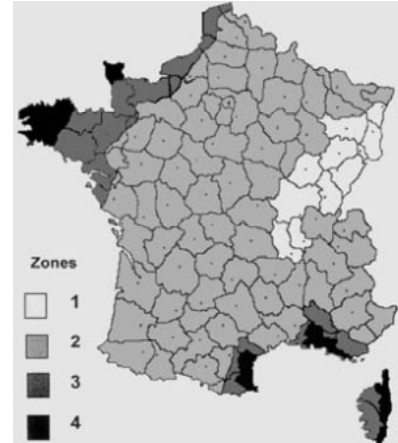
Zone III with 25.0 m/s: The rest of the Netherlands.





Germany

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.



Germany

Wind load zone 1 with 22.0 m/s
Wind load zone 2 with 24.0 m/s
Wind load zone 3 with 26 m/s
Wind load zone 4 with 28.0 m/s

19.3 Definition of the terrain or roughness category



Terrain category 0 (The most stringent)

Sea or coastal area with wind flowing over the open sea. Wind load zone 4 with 28.0 m/s

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(The least stringent)

Urban areas where at least 15% of the surface area is covered with buildings with an average height of over 15 metres.

Source: NBN EN 1991-1-4

19.4 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 recommendations is wind resistance class 2. This does not mean that class 0 or class 1 products cannot 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

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

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

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

19.5 The wind resistance class depending on slats and guide rails

ALU237

guide rails	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
117/118/119/120	6								5	4			3			2		1			
117S/118S	6						5	4			3			2		1		0			
080/082	6								5	4			3			2		1			

ALU242(S)

guide rails	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
117/118/119/120	6												5	4			3				
117S/118S	6											5	4		3			2			
080/082	6												5		4		3				

PVC37

guide rails	1000	1100	1200	1300	1400	1500	1600
117/118/119/120	4	3	2	1	0		
117S/118S	3	2	1	0			
080/082	3	2	1	0			

MIDI

guide rails	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
117/118/119/120	5	4	3	2	1	0									
117S/118S	4	3	2	1	0										
080/082	4	3	2	1	0										

TECHNICAL SHEET BUILT-IN ROLLER SHUTTERS

ALU252

guide rails	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
040	6																		5		4			3					
041/043/046	6																5		4			3			2				
045	6																	5		4			3						
081	6																5		4			3							
025	6																		5		4			3					

ALU255

guide rails	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			
040	6																				5			4								
041/043/046	6																		5			4			3							
045	6																				5			4								
081	6																		5			4			3							
025	6																							5			4					

guide rails	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800	4900	5000
040	4	3				2						
041/043/046	3			2				1				
045	3				2							
081	3			2				1				
025	4	3				2						

ISIROLL

guide rails	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
040	6				5	4	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1
041/043/046	6				5	4	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1
045	6				5	4	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1
081	6				5	4	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1
025	6				5	4	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1

20. ORDER FORM

Click on the link below:

[Order form](#)