RYTERNA

TECHNICAL DATA

Industrial doors

EN ISO 9001:2008

EN 13241-1
Quality Assured Firm

CONTENT

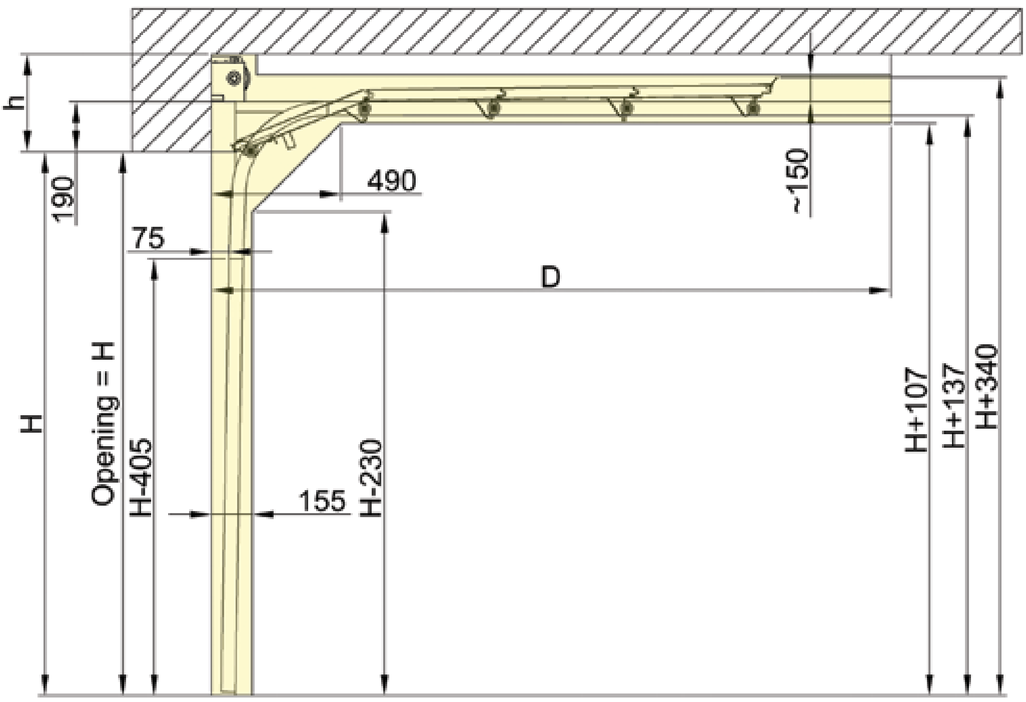
TRACKS

STD

Required sideroom	SL	SR
Manual operation	110	110
Electric motor on shaft	110	285
Chain host	110	240

Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

Required headroom	h	D	Opening
H ≤ 4200	370	H + 510	H
4200 < H ≤ 5030	430	H + 510	H
5030 < H ≤ 6000	505	H + 510	H
H > 6000 on request			



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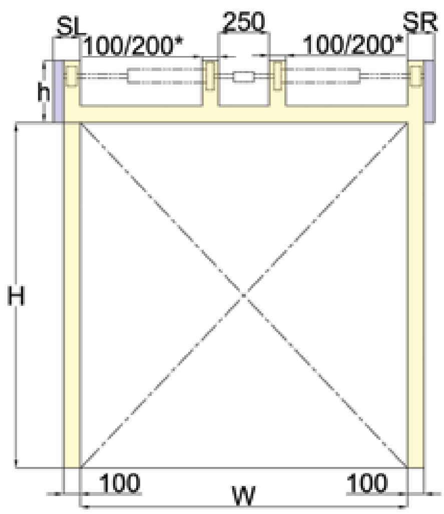
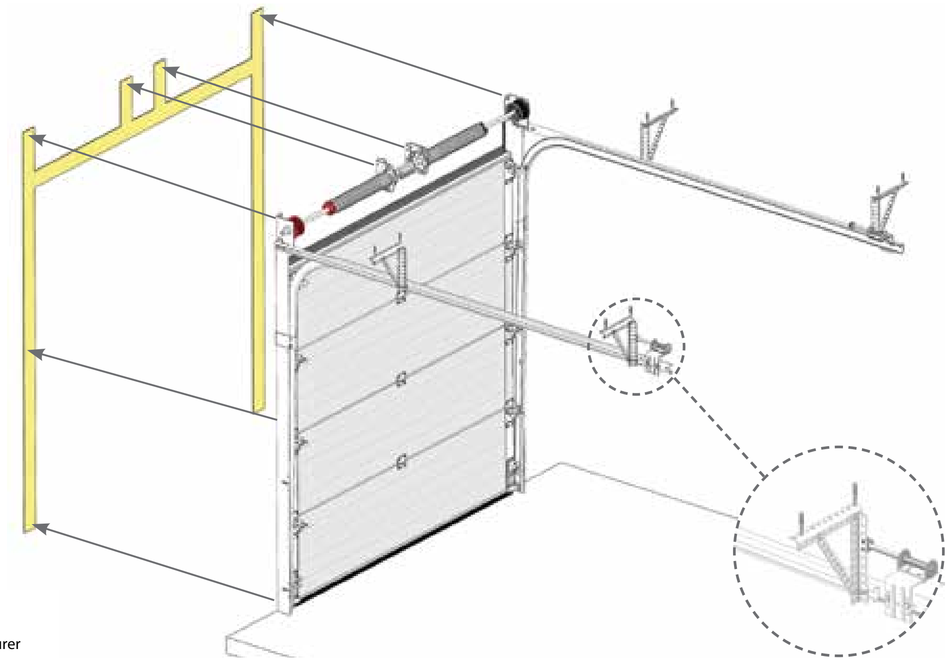




* 200 mm for doors with Ø 152 mm springs

For W > 5000 mm regarding the quantity of springs consult the manufacturer

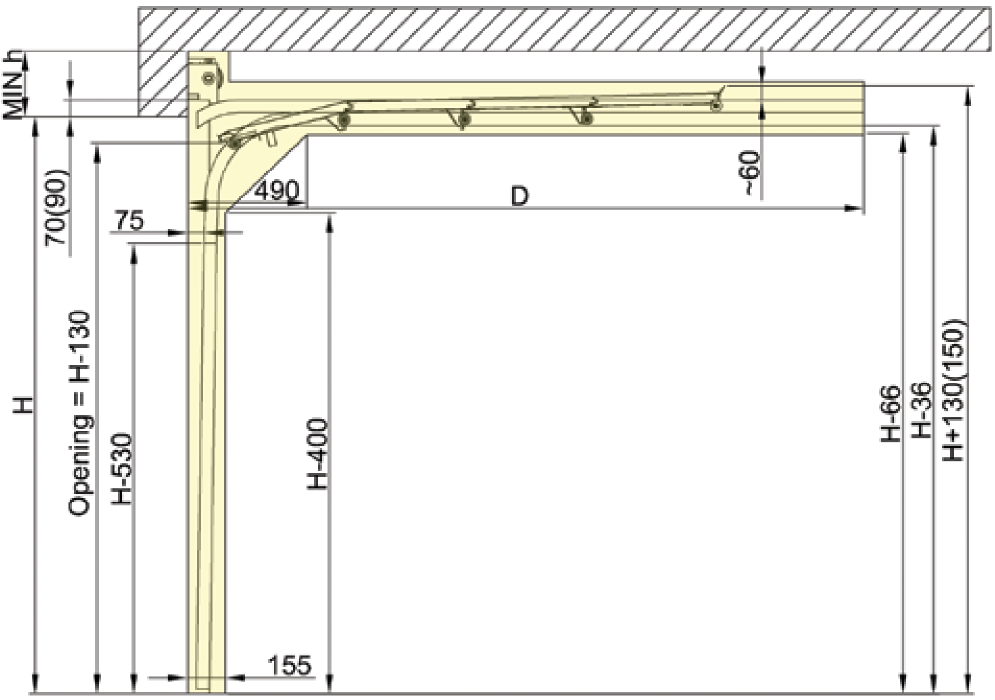
LHR-**FM**

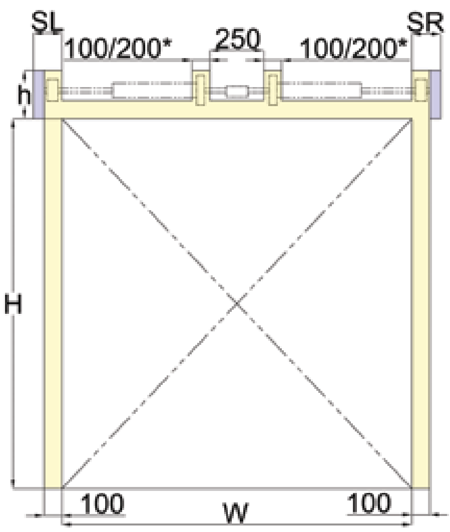
Required sideroom	SL	SR
Manual operation	110	110
Electric motor on shaft	110	285
Chain host	110	240

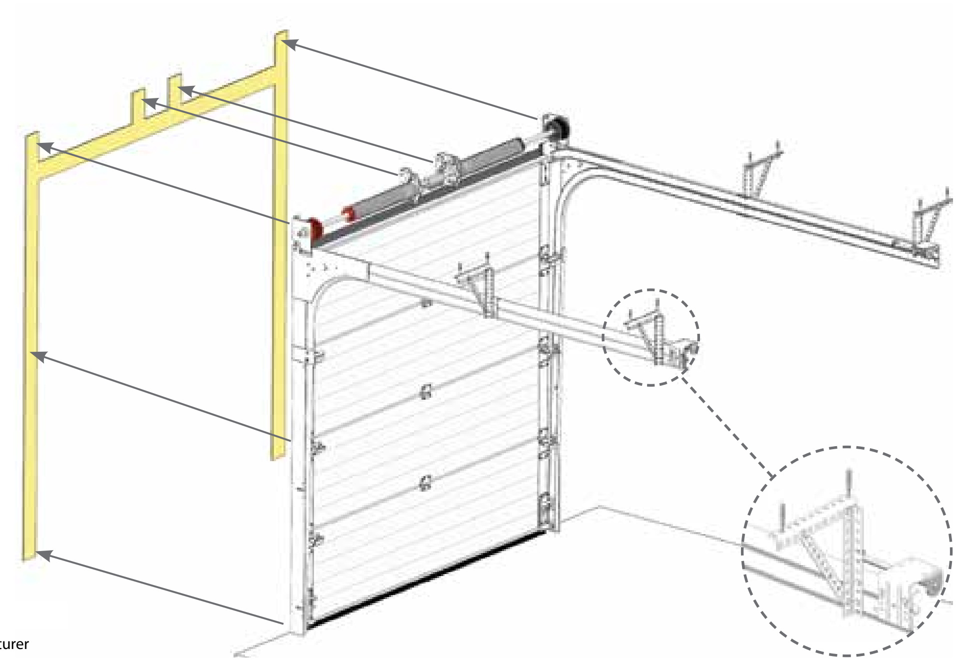
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

Required headroom	h	D	Opening
H ≤ 4200	270	H + 510	H - 130
4200 < H ≤ 5030	310	H + 510	H - 130
H > 5030 on request			

If W > 6000 mm cable brake protection is recommended together with cable tensioner







* 200 mm for doors with Ø 152 mm springs

For W > 5000 mm regarding the quantity of springs consult the manufacturer

LHR-RM

Required sideroom	SL	SR
Manual operation	110	110
Electric motor on shaft	110	285
Chain host	110	240
With retractable motor	110	110

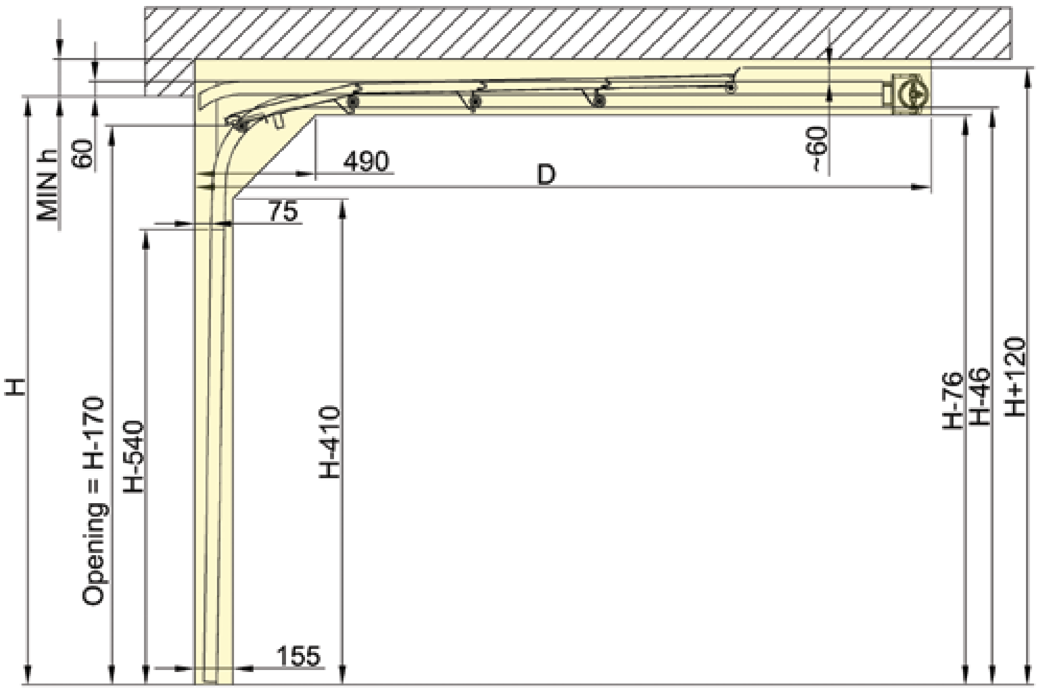
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

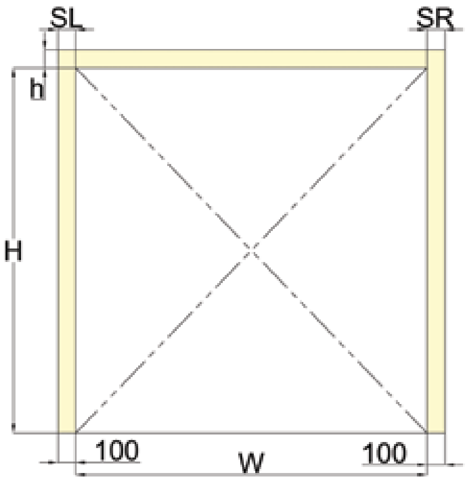
Required headroom	h	D	Opening
Manual operation	120	H + 700	H - 170
With retractable motor	150	H + 700*	H - 100
Electric motor on shaft	120	H + 700	H - 170

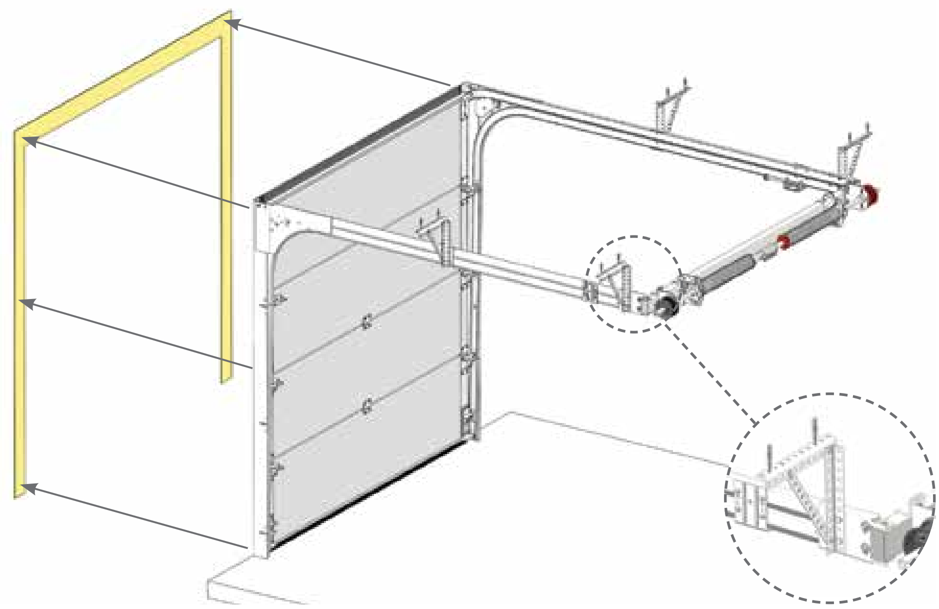
If W > 6000 mm cable brake protection is recommended together with cable tensioner.

Max weight 450 kg

* H + 1100 with sommer operator







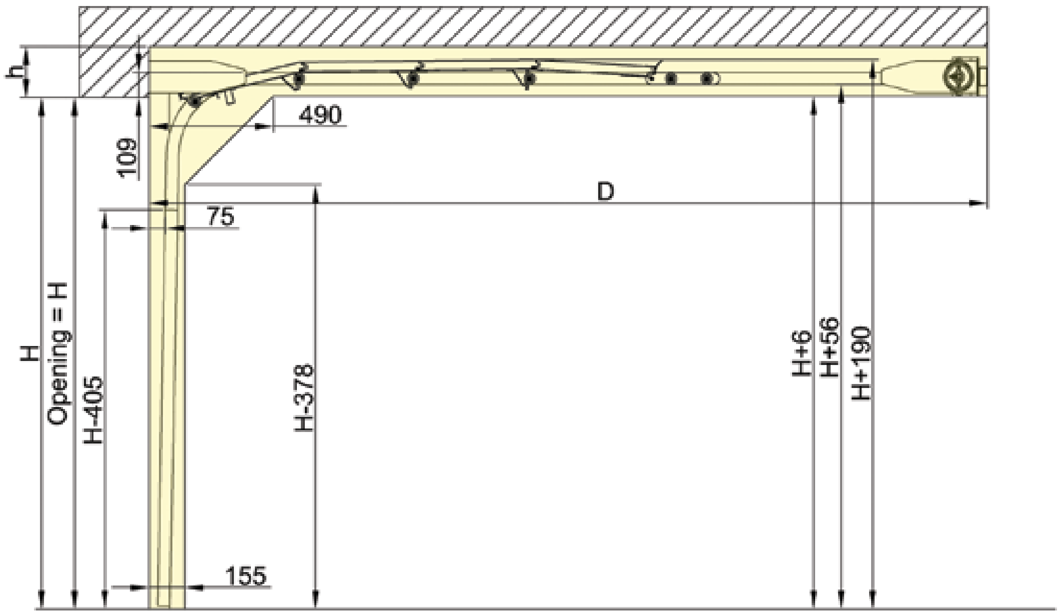
STD-RM

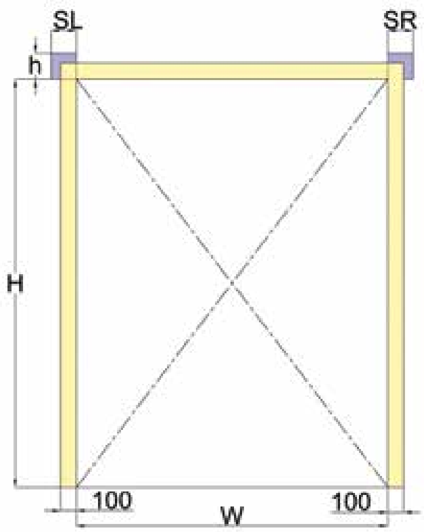
Required sideroom	SL	SR
Manual operation	130	130
Electric motor on shaft	130	280
Chain host	130	240

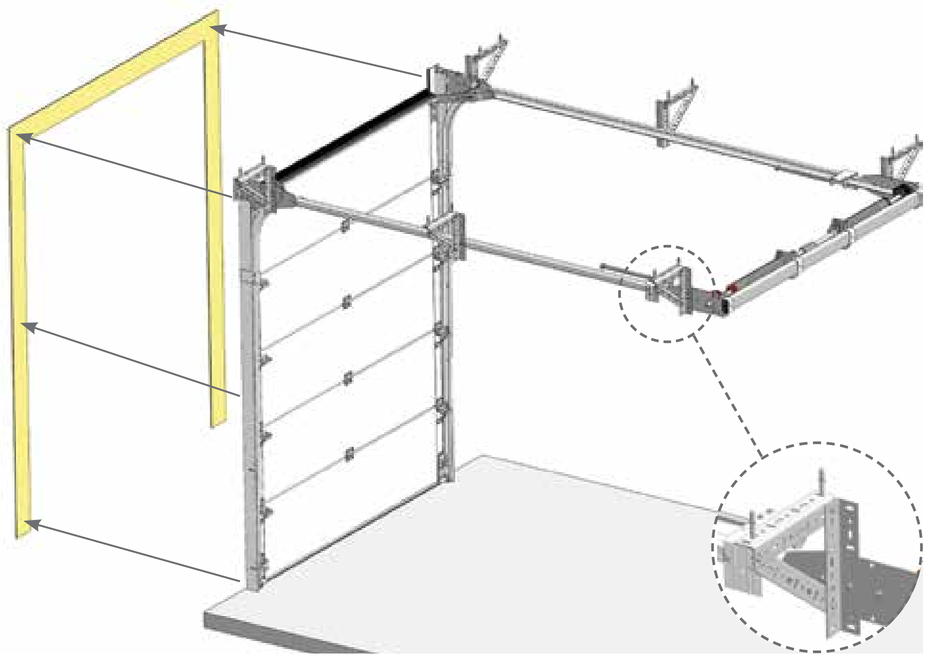
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side

Required headroom	h	D	Opening
Manual operation	190	H + 1220	H*
Electric motor on shaft	190	H + 1220	H*
With wicket door	200	H + 1220	H*
With retractable motor	235	H + 1220	H*

W max = 6000 mm
Max weight 450 kg
* For doors wider than 4500 mm or with wicket door daylight opening will be H - 40 mm







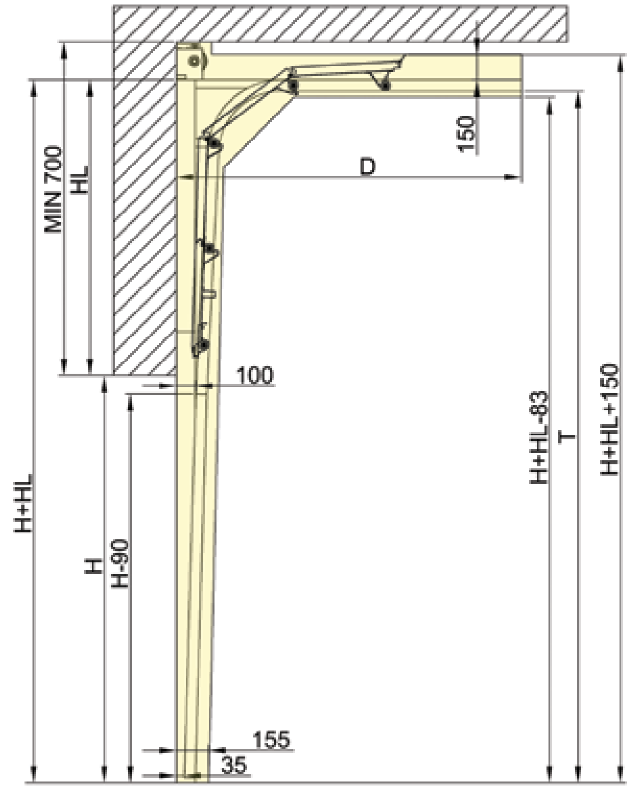
HL-TM

Required sideroom	SL	SR
Manual operation	130	130
Electric motor on shaft	130	285
Chain host	130	240

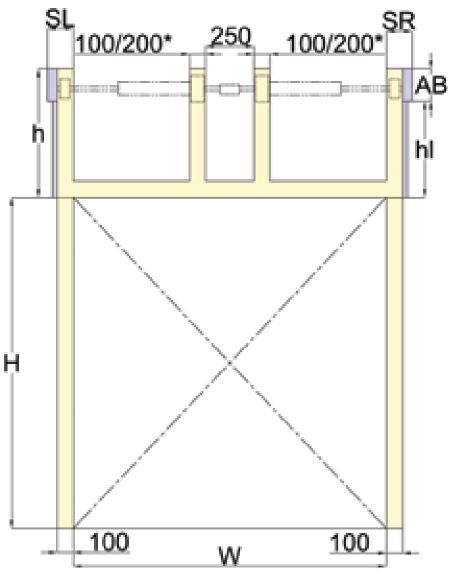
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

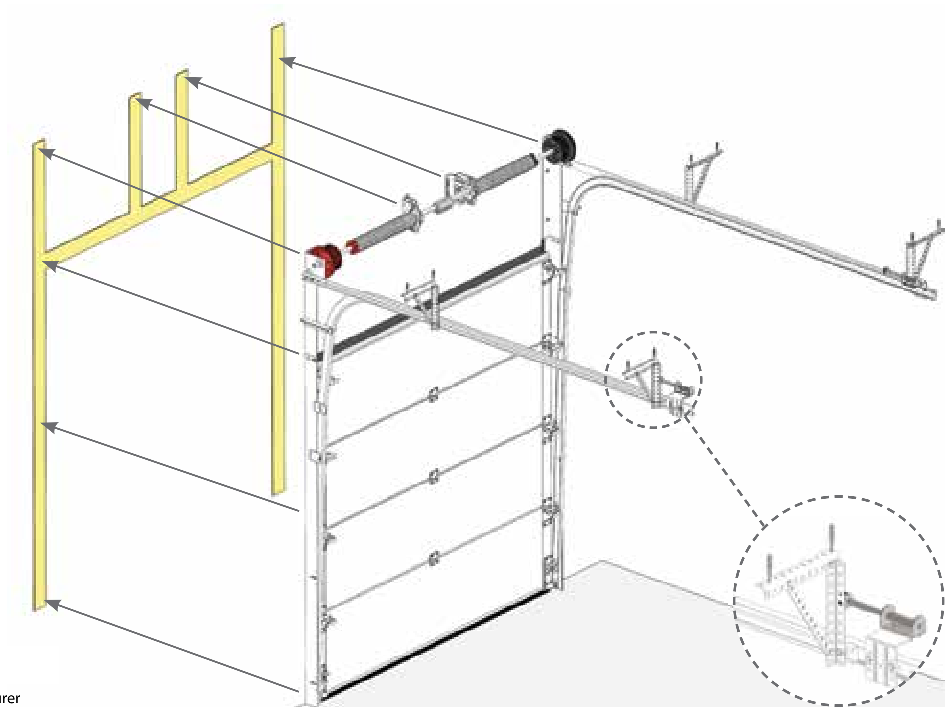
Required headroom	h = min 700, max 4500
Opening	H
Installation depth	D = H - HL + 1010

Max HL = 4200 mm



Height & HL correlation		
H ≤ 4500	HL ≤ 1370	AB = 200
4500 < H ≤ 6000	HL ≤ 4200	AB = 300
H > 6000 on request		





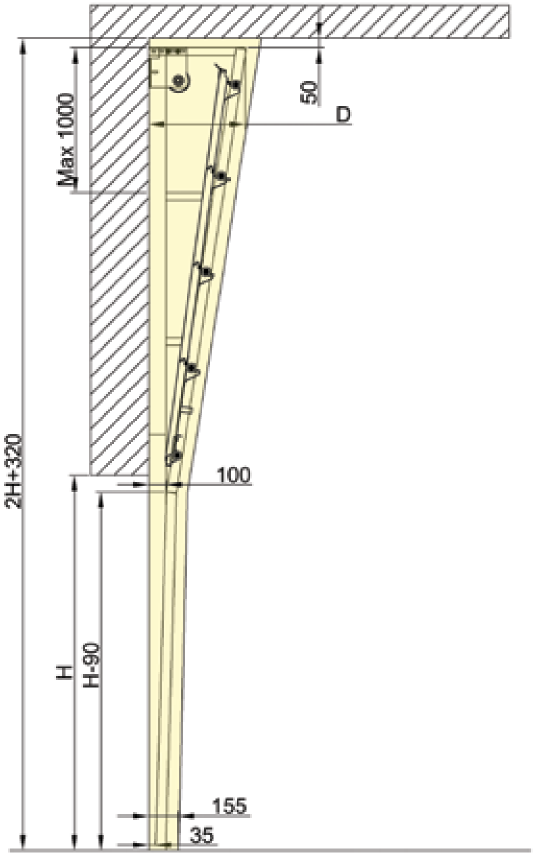
* 200 mm for doors with Ø 152 mm springs

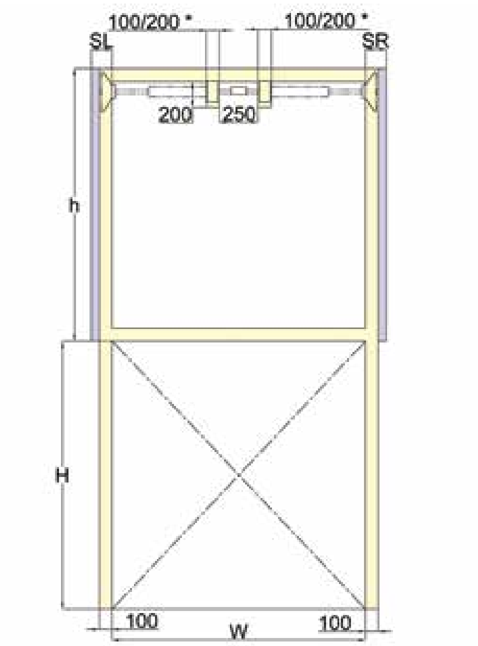
For W > 5000 mm regarding the quantity of springs consult the manufacturer

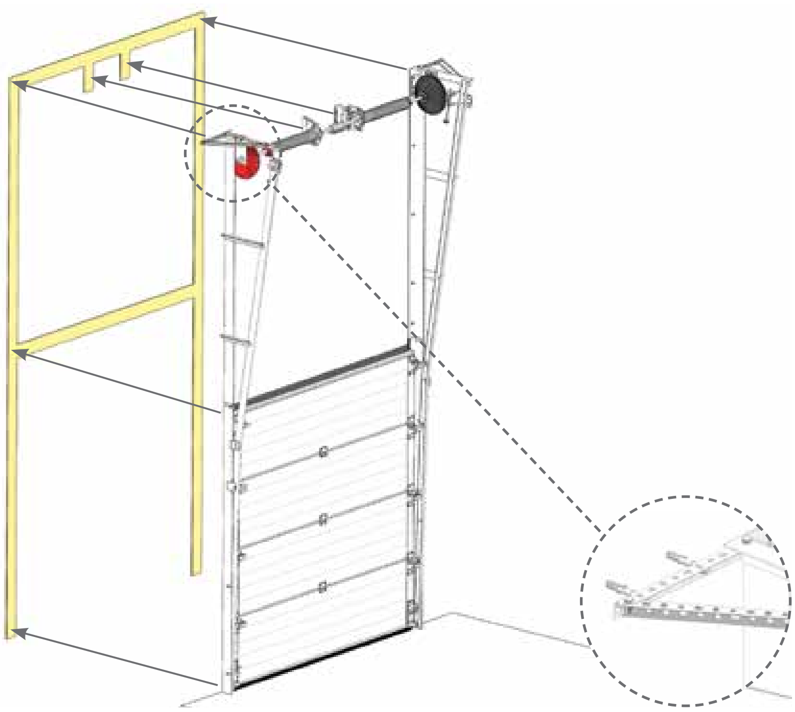
VL-TM

Required sideroom	SL	SR
Manual operation	130	130
Electric motor on shaft	130	285
Chain host	130	240

Required headroom	h = H + 320
Opening	H
Installation depth	D = 400, H ≤ 3300 D = 450, 3300 < H ≤ 6000, max weight 500 kg D = 550, 3300 < H ≤ 6000, max weight 750 kg H > 6000 on request







* 200 mm for doors with Ø 152 mm springs

For W > 5000 mm regarding the quantity of springs consult the manufacturer

HL-MM1 with lower torsion spring shaft

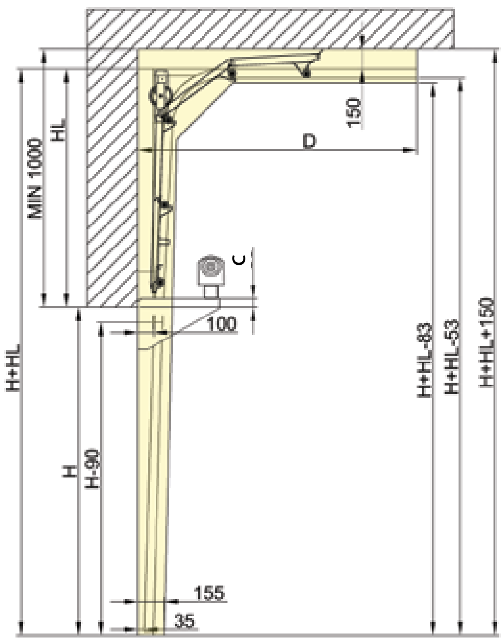
Required sideroom	SL	SR
Manual operation	210	210
Electric motor on shaft	210	345
Chain host	210	300

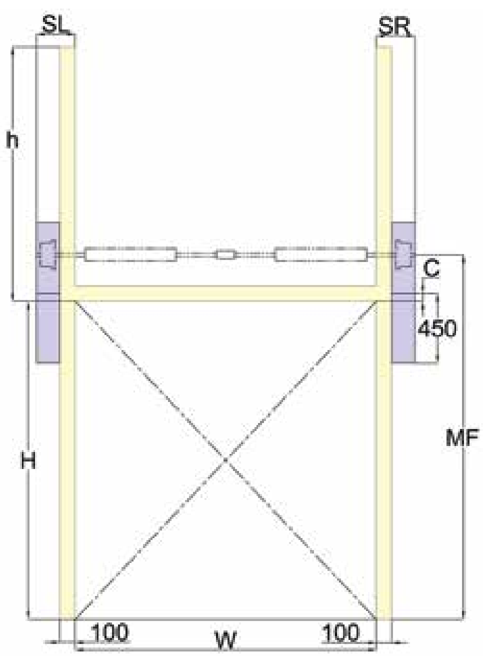
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

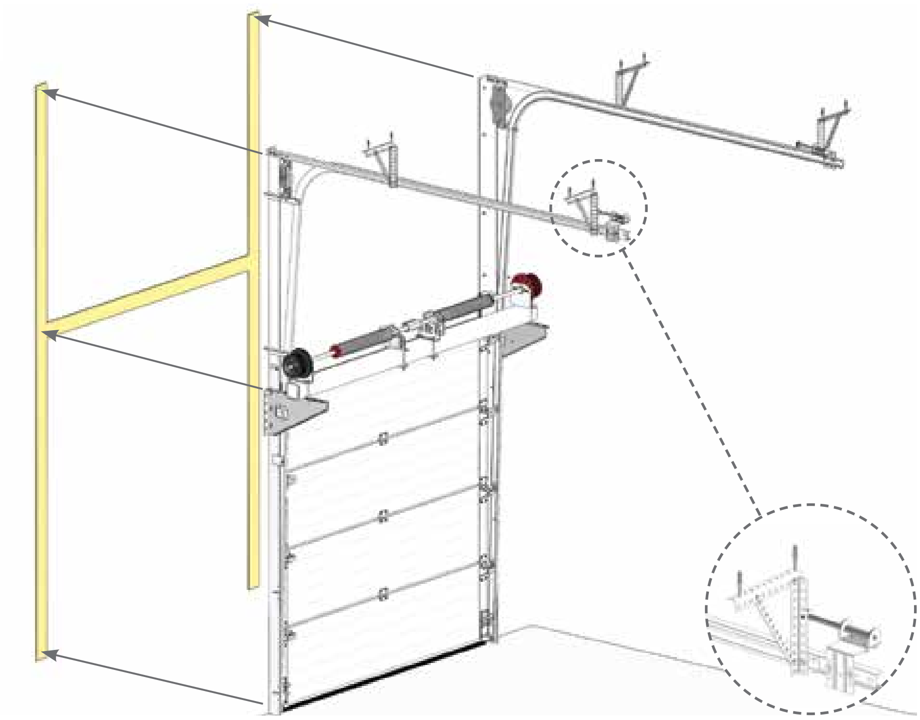
Required headroom	h = min 1000, max 4360
Opening	H
Installation depth	D = H - hl + 1010

	C	MF
W ≤ 3500, max weight 200 kg	50	H + (241÷282)

It's not able to use cable failure safety device







HL-MM2 with lower torsion spring shaft

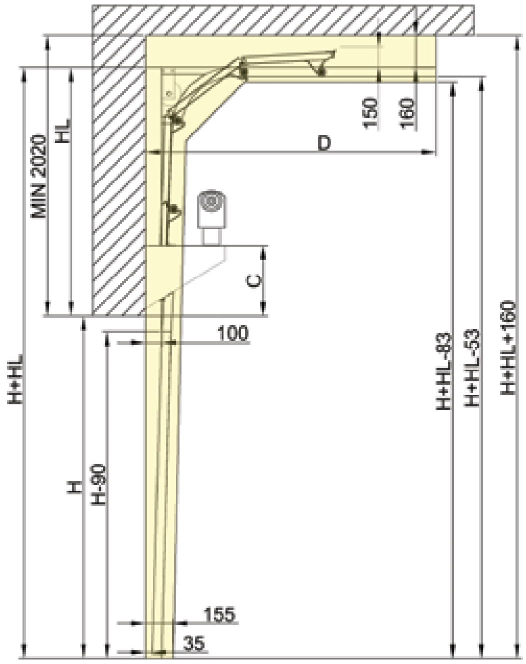
Required sideroom	SL	SR
Manual operation	260	260
Electric motor on shaft	260	395
Chain host	260	350

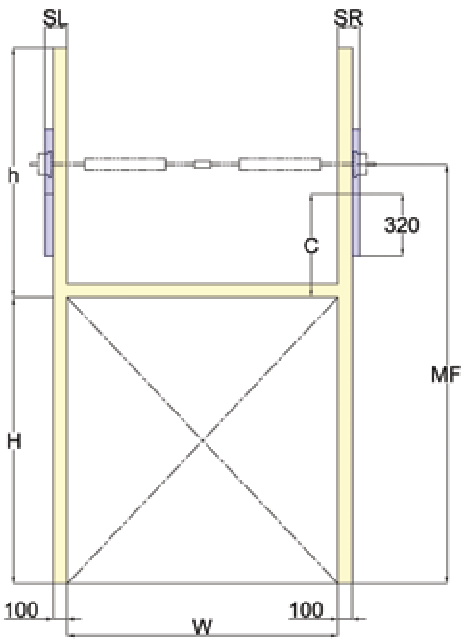
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

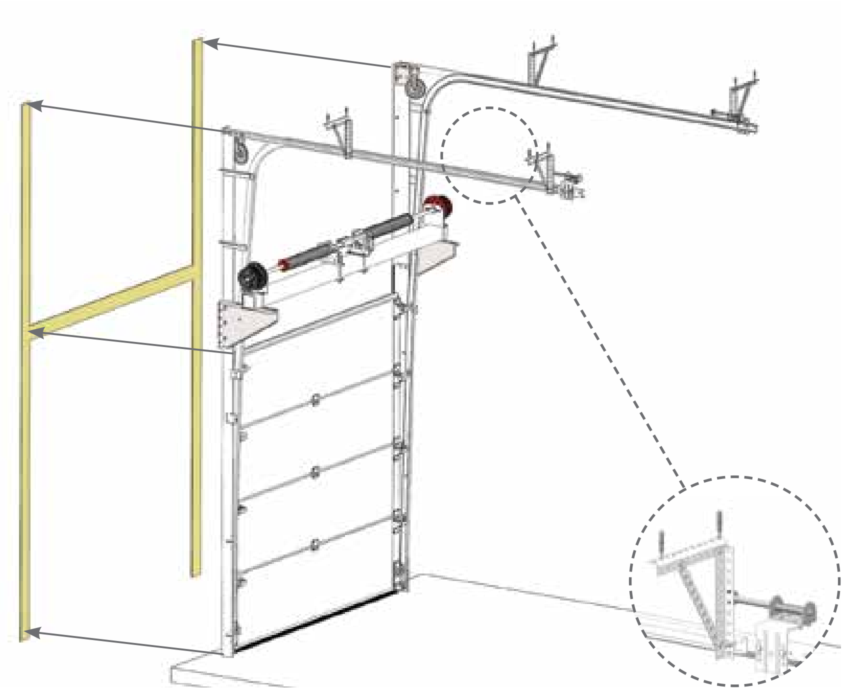
Required headroom	h = min 2020, max 4360
Opening	H
Installation depth	D = H - hl + 1010

	C	MF
3500 < W ≤ 6000	400	H + (586 ÷ 652)

Max weight 600 kg







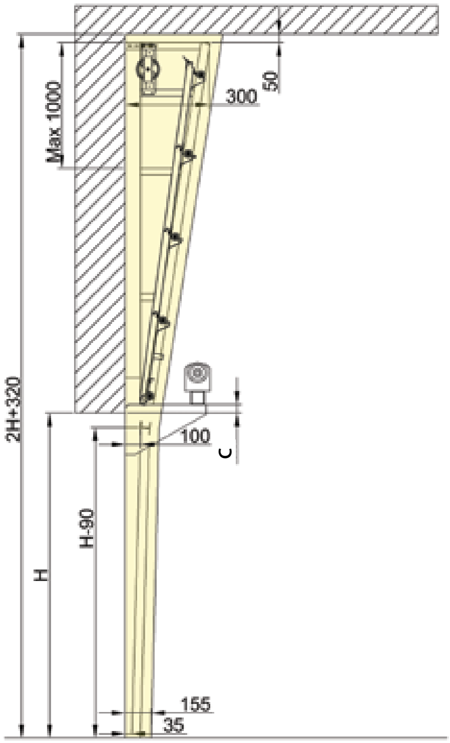
VL-MM1 with lower torsion spring shaft

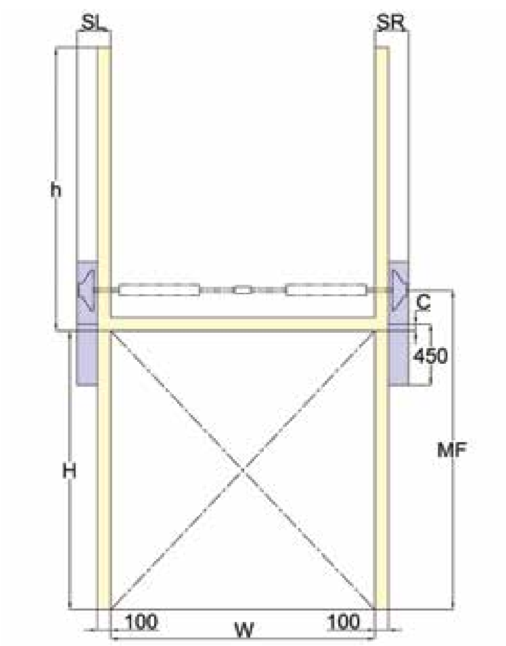
Required sideroom	SL	SR
Manual operation	210	210
Electric motor on shaft	210	345
Chain host	210	300

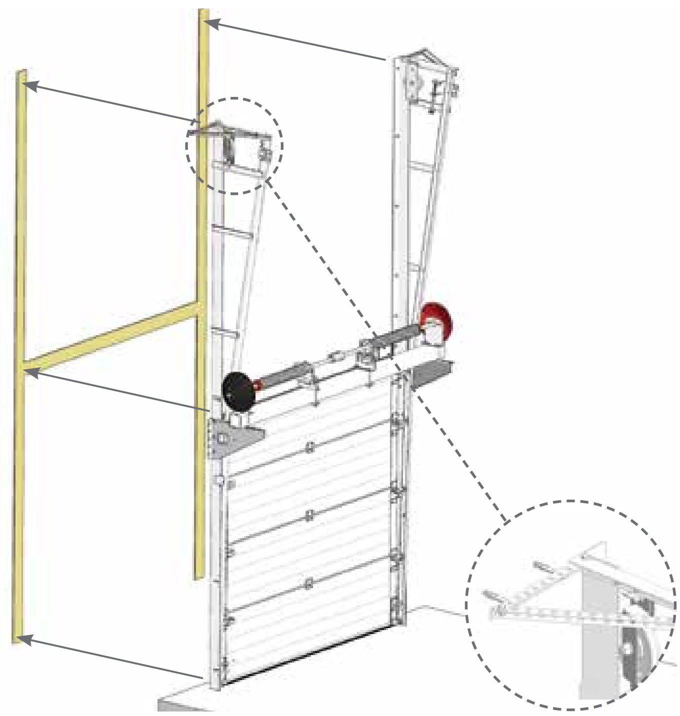
	C	MF
W ≤ 3500, max weight 200 kg	50	H + (241÷282)

Required headroom	h = H + 320, min 1000
Opening	H
Installation depth	D = 300

⚠ It's not able to use cable failure safety device







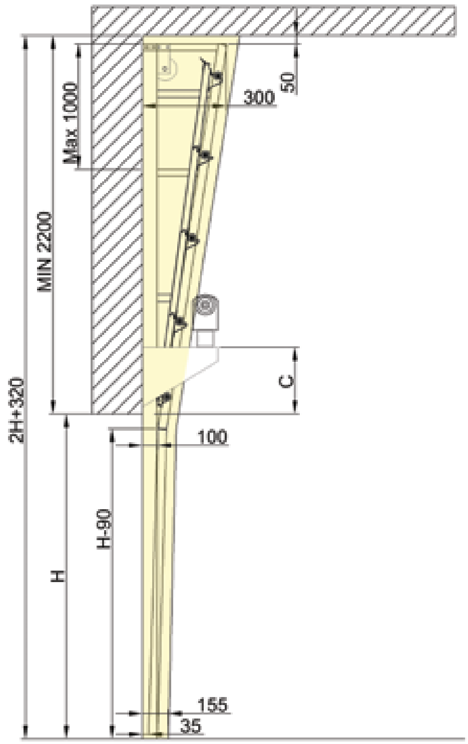
VL-MM2 with lower torsion spring shaft

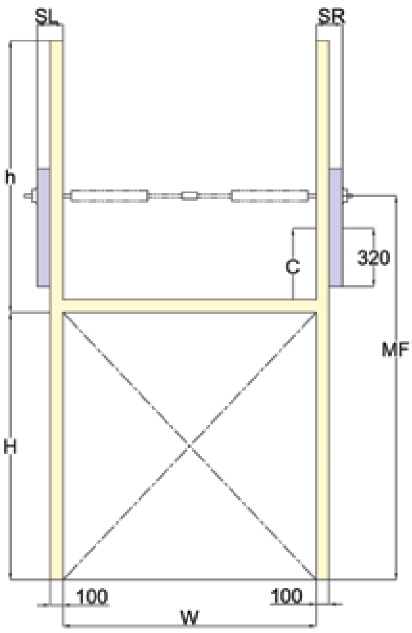
Required sideroom	SL	SR
Manual operation	210	210
Electric motor on shaft	210	345
Chain host	210	300

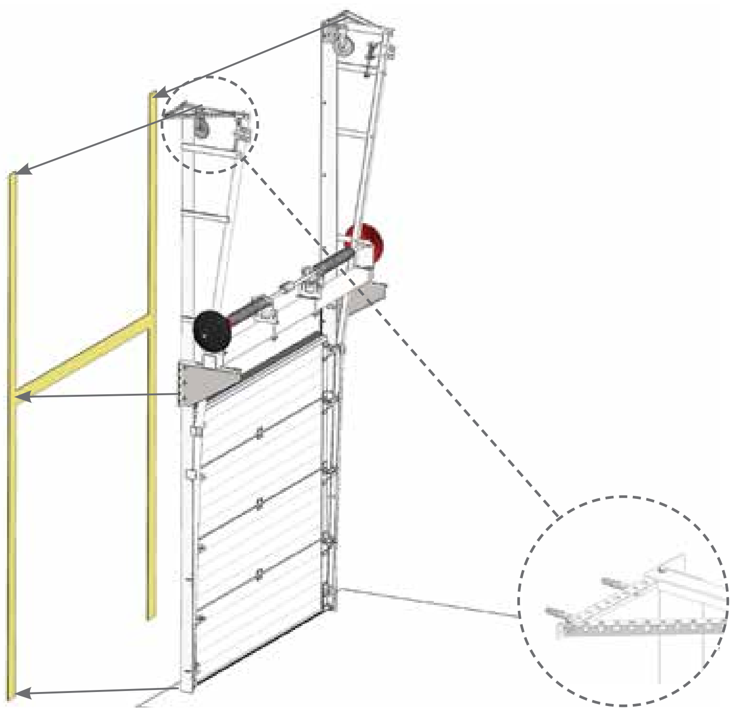
	C	MF
3500 < W ≤ 6000	400	H + (586 ÷ 652)

Required headroom	h = H + 320, min 2200
Opening	H
Installation depth	D = 300

Max weight 600 kg







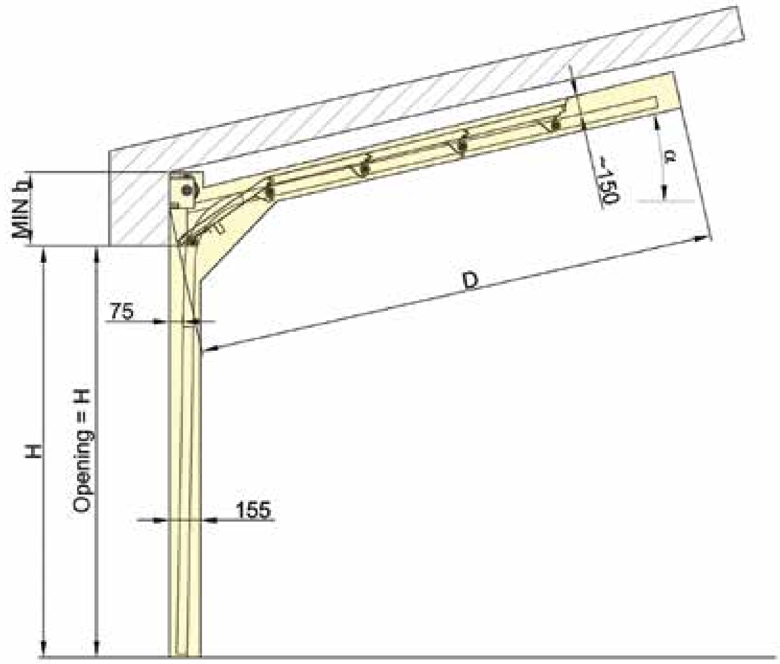
STD-PR

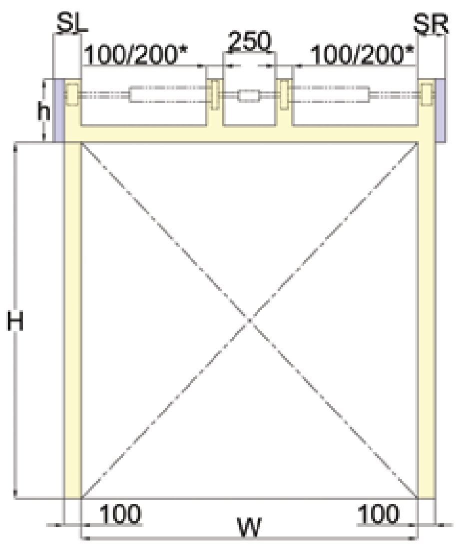
Required sideroom	SL	SR
Manual operation	110	110
Electric motor on shaft	110	285
Chain host	110	240

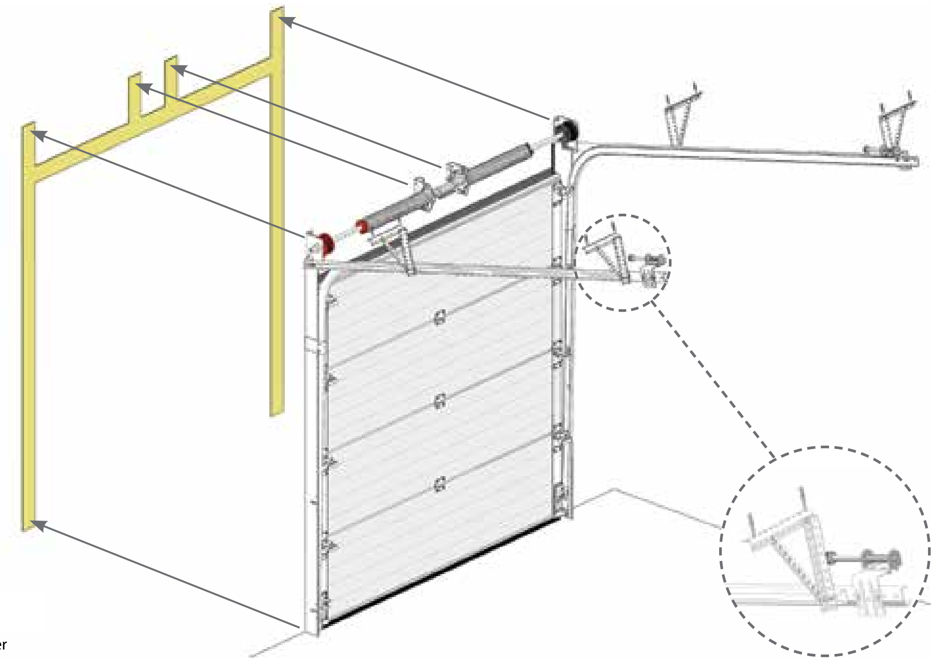
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

Required headroom	α ≤ 25°	25° < α ≤ 35°	35° < α ≤ 45°	D
H ≤ 2500	370	370	435	H + 510
2500 < H ≤ 5000	435	435	435	H + 510
5000 < H ≤ 6000	505	505	505	H + 510
H > 6000	on request			

Max α = 45°







* 200 mm for doors with Ø 152 mm springs

For W > 5000 mm regarding the quantity of springs consult the manufacturer

RM-PR

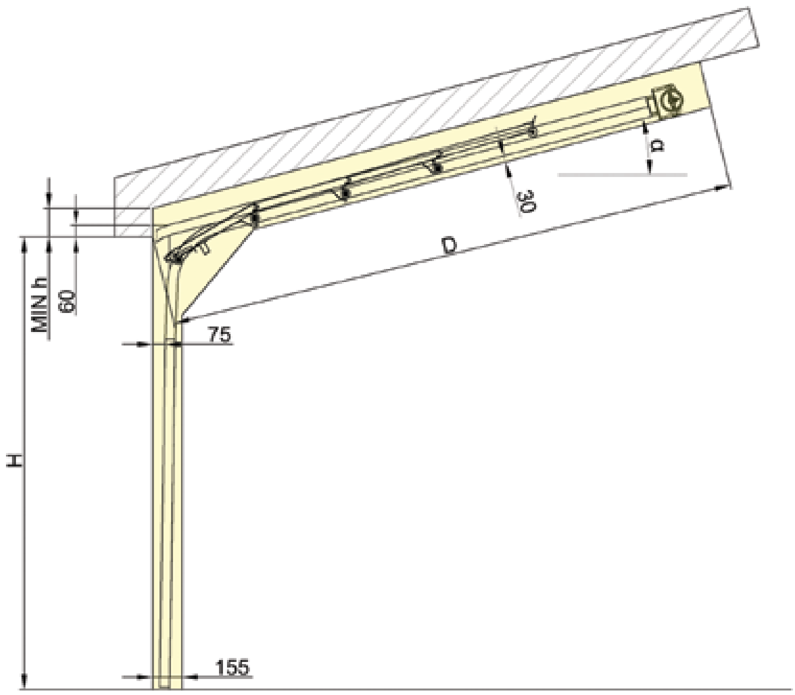
Required sideroom	SL	SR
Manual operation	110	110
Electric motor on shaft	110	285
Chain host	110	240
With retractable motor	110	110

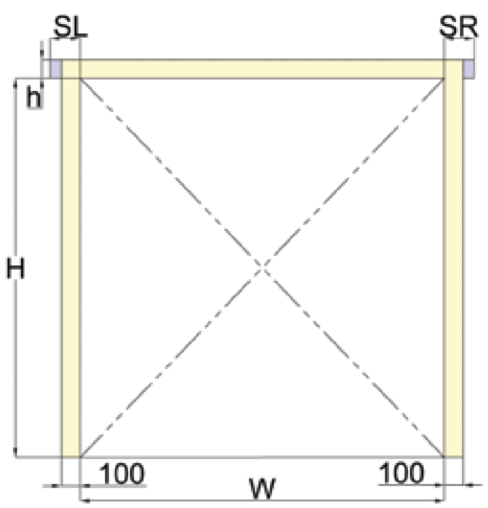
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

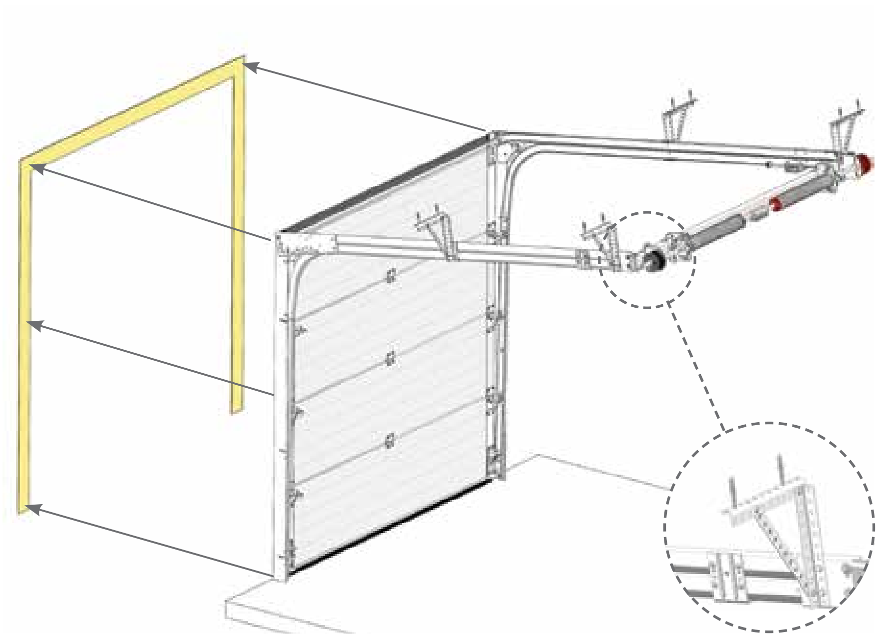
Required headroom	h	D	Opening
Manual operation	120	H + 700	H - 170
Electric motor on shaft	120	H + 700	H - 170
With retractable motor	150	H + 700*	H - 100

W max = 6000 mm
* H + 1100 with sommer operator

Max α = 15°
α > 15° on request







FM-PR

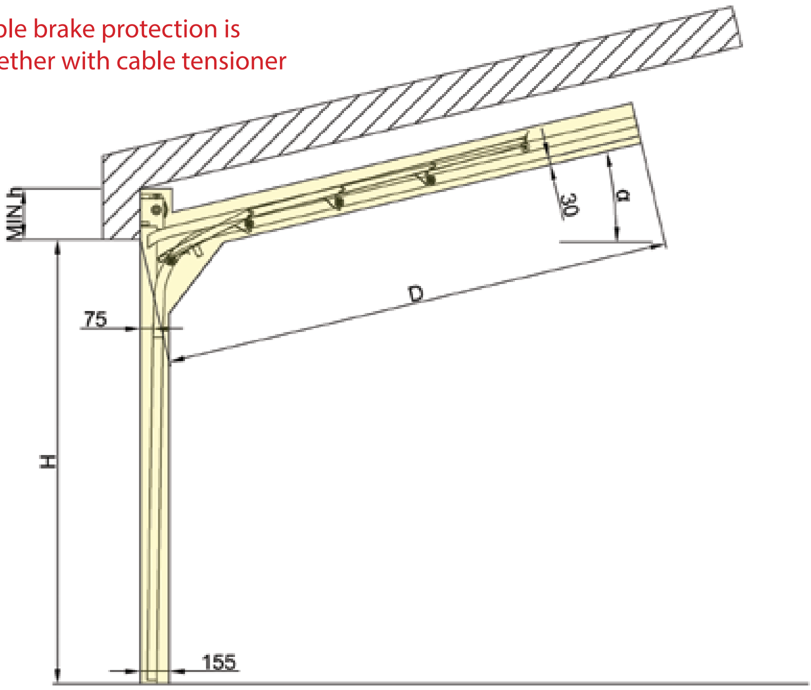
Required sideroom	SL	SR
Manual operation	100	100
Electric motor on shaft	100	285
Chain host	100	240

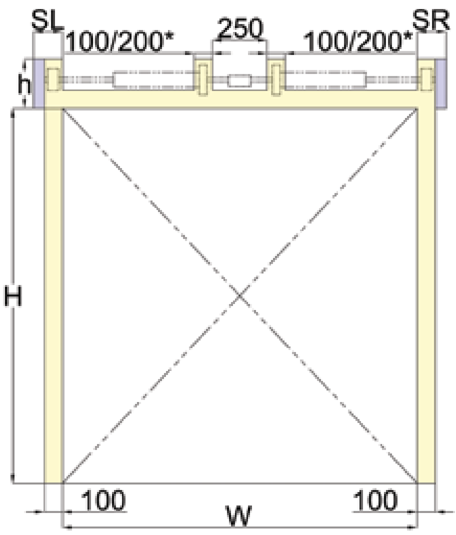
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

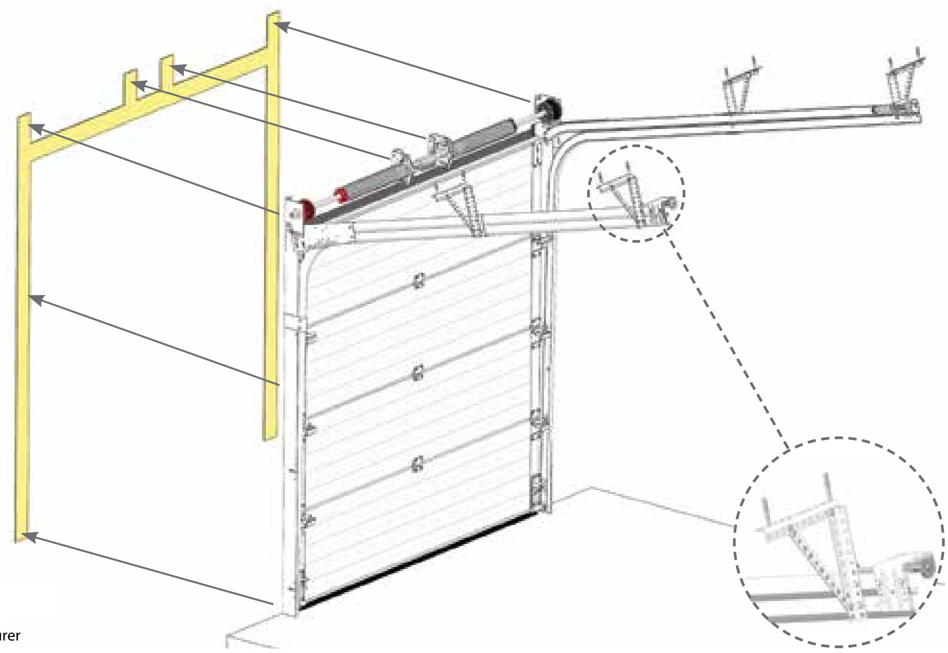
Required headroom	α ≤ 25°	25° < α ≤ 35°	35° < α ≤ 45°	D	Opening
H ≤ 2500	275	320	350	H + 550	H - 130
2500 < H ≤ 5030	320	320	on request	H + 550	H - 130
H > 5030	on request				

Max α = 45°

If W > 6000 mm cable brake protection is recommended together with cable tensioner







* 200 mm for doors with Ø 152 mm springs

For W > 5000 mm regarding the quantity of springs consult the manufacturer

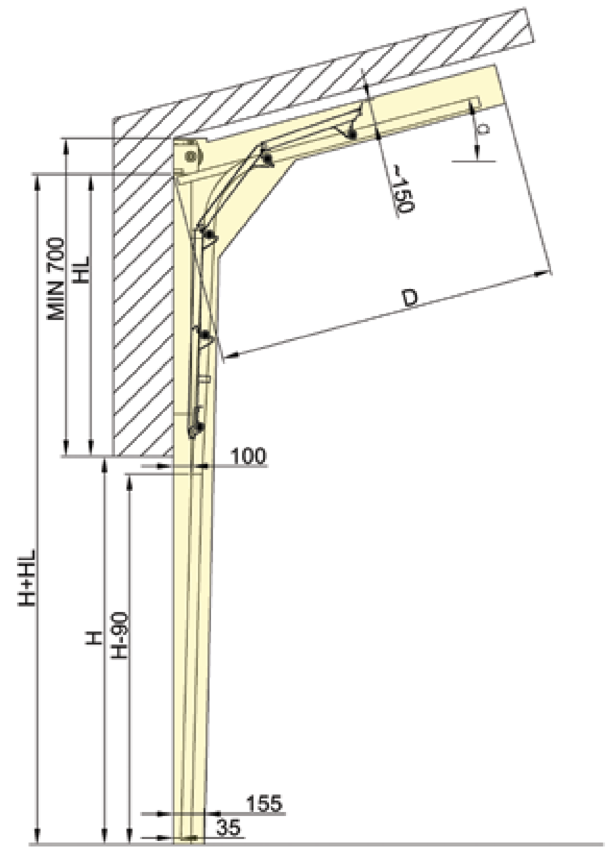
HL-TM PR

Required sideroom	SL	SR
Manual operation	150	150
Electric motor on shaft	150	285
Chain host	150	240

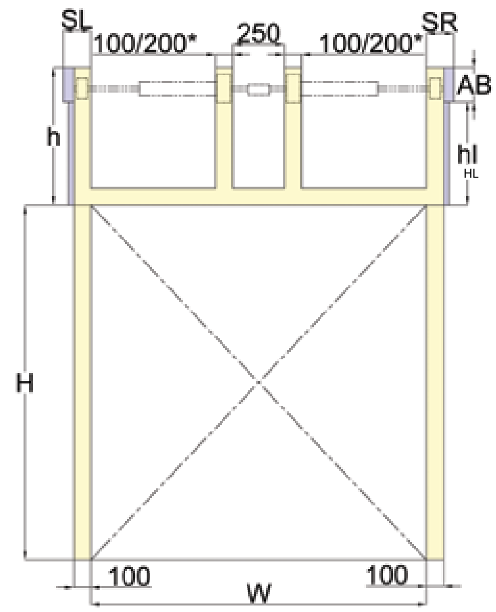
Number or required suspentions	
Up to depth of 3500 mm	2 suspentions per side
Up to depth of 4500 mm	3 suspentions per side
Up to depth of 5500 mm	4 suspentions per side
Above depth of 5500 mm	5 suspentions per side

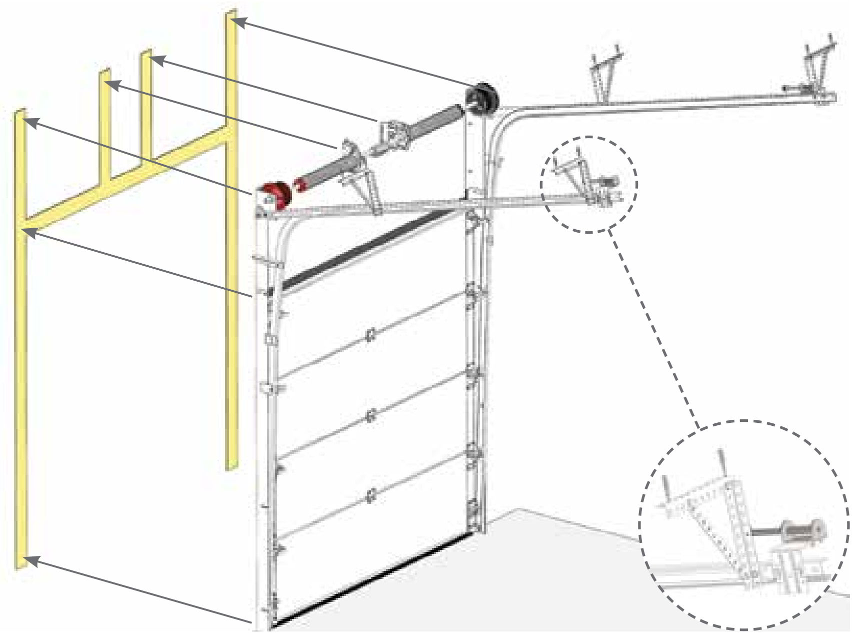
Required headroom	h = min 800, max 4500
Opening	H
Installation depth	D = H - HL + 1010

Max α = 45°, max HL = 4200



Height & HL correlation		
H ≤ 4500	HL ≤ 1370	AB = 200
H ≤ 6000	HL ≤ 4200	AB = 300
H > 6000 on request		





* 200 mm for doors with Ø 152 mm springs

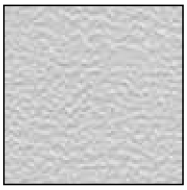
For W > 5000 mm regarding the quantity of springs consult the manufacturer

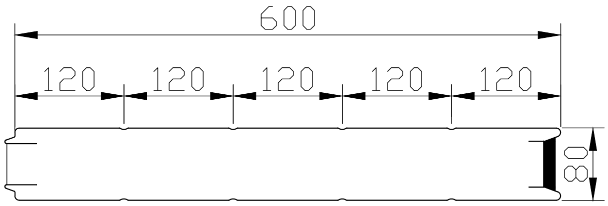
TLP 80 THERMO panels / tracks

Panel type	S (mm)	Thermal conductivity (λ^D[W/mK])	Panel weight		U value
			Kg/m	Kg/m^2	W/m^{2}K
R-600	80	0,023	7,4	12,3	0,28

Section type	U value (W/m2K)	Wind load resistance class	Water penetration class	Air premability class	Acoustic insulation (dB)
Sandwich	1 - 1,6	5	3	2	-24

PANEL SURFACES	PANEL COLOURS	STANDARD COLOURS
RIB / stucco	painted RAL	RAL 9016 (both sides)





STD / LHR-FM / HL-TM / VL-TM

Required sideroom	STD or LHR-Fm, left / right	HL-TM or VL-TM left / right
Manual operation	140 / 140	160 / 160
Electric motor on shaft	140 / 315	160 / 315
Chain host	140 / 270	160 / 270

Lift type	Opening, H	Required headroom, h	Instalation deph, D	Daylight opening
STD	H ≤ 5030	460	H + 550	H
	H > 5030 on request			
LHR-FM	H ≤ 5030	310	H + 550	H - 130
HL-TM	H < 6000	720 < h ≤ 4500	H - h + 1310	H
VL-TM	H ≤ 3300	H + 320	450	H
	3300 < H ≤ 6000, max 500 kg	H + 320	500	H
	3300 < H ≤ 6000, max 750 kg	H + 320	600	H
	H > 6000 on request			

LHR-RM / STD-RM

Lift type	Opening, H	Required headroom, h	Instalation deph, D	Daylight opening	Required side-room, left / right
LHR-RM	Manual operation	170	H + 740	H - 170	140 / 140
	Electric motor on shaft	170	H + 740	H - 170	140 / 315
	With retractable motor	200	H + 740	H - 170	140 / 140
	Chain host	170	H + 740	H - 170	140 / 270
STD-RM	Manual operation	240	H + 1260	H*	160 / 160
	Electric motor on shaft	240	H + 1260	H*	160 / 310
	With retractable motor	285	H + 1260	H*	160 / 160
	Chain host	240	H + 1260	H*	160 / 280

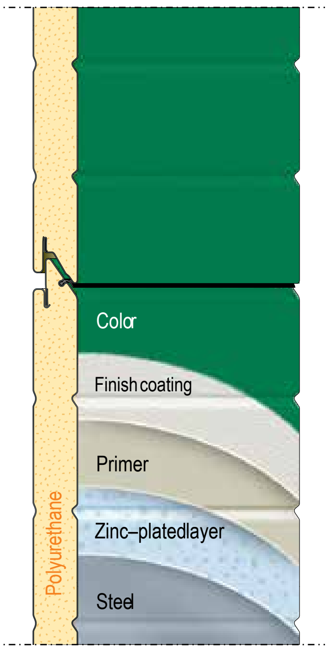
max weight = 450 kg
* For doors wider than 4500 mm daylight opening will be H - 40 mm

PANELS

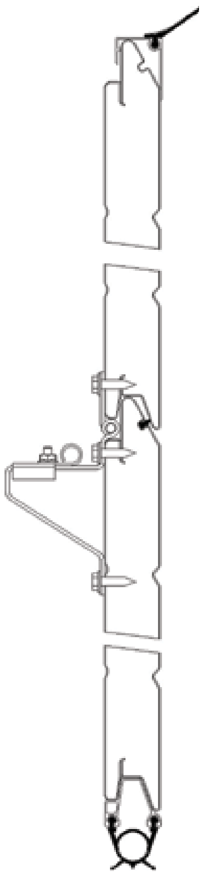
PANEL TYPES

Panel type	S (mm)	K		Λ	Panel weight		Tolerances			U value
		Kcal m²hK	Watt m²K	Kcal mK	Kg/m	Kg/m²	Thickness	Width	Length	W m²K
R-500	40	0,43	0,50	0,017	5,6	11,2	+/- 2	+/- 1	+/- 5	0,52
R-610					6,8	11,2				

Section type	U value (W/m²K)	Wind class	Water penetration class
Sandwich	1,6	5	3
Sandwich with windows	1,7	3	3
Sandwich with pass door	1,8	2	0
FV	4,3	4	0
FV wicket door	4,3	2	0
FV thermo	3,4	4	0

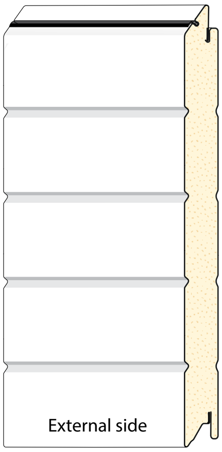


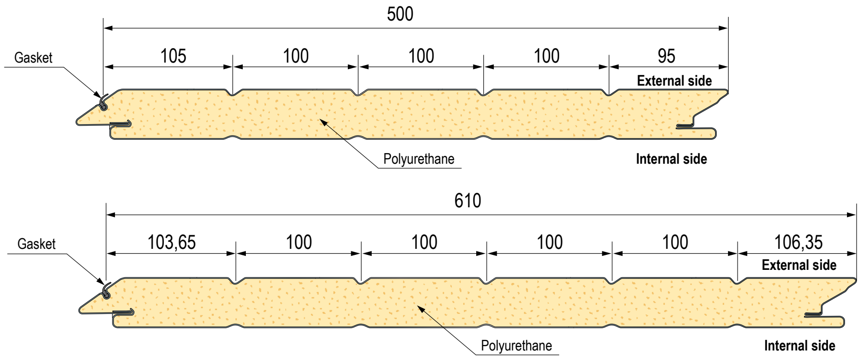
All panels Internal side - ribbed, stucco embossed RAL 9002



PANEL TYPES

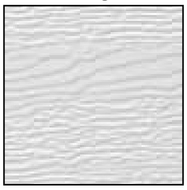
RIB



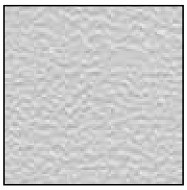


PANEL SURFACES	PANEL COLOURS	STANDARD COLOURS

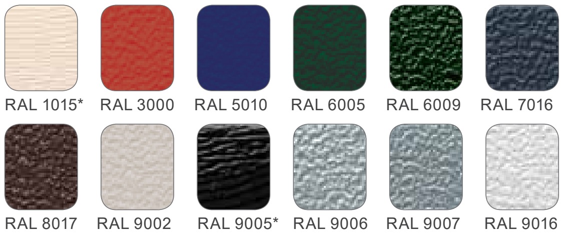
woodgrain



stucco

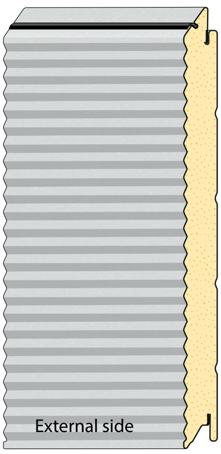


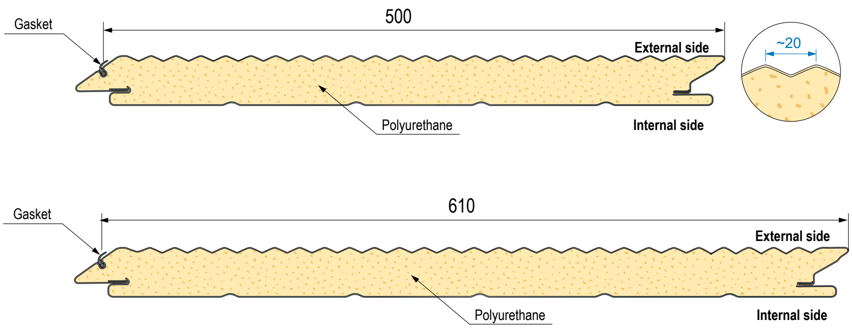
painted RAL



* RAL 1015, RAL 9005 in woodgrain only.

MACRORIB



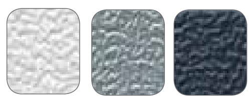


PANEL SURFACES	PANEL COLOURS	STANDARD COLOURS

stucco

Standard colour: RAL9007.

painted RAL

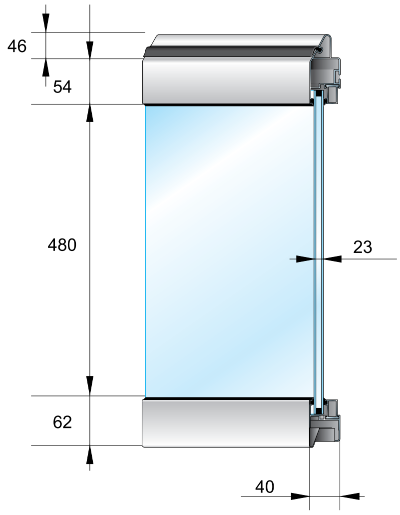


white RAL9016
silver RAL9007
grey RAL7016

ALU-framed PANEL TYPES

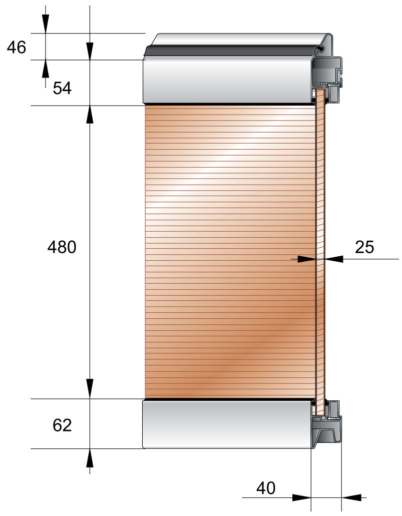
Full View

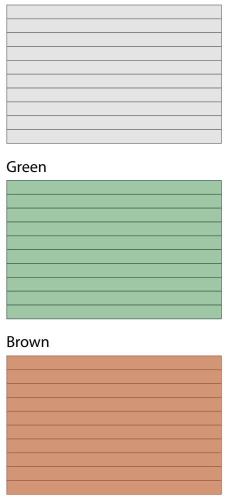
Double insulated acrylic glazing
Anti-scratch acrylic glazing (outside/inside)



Polycarbonate filling

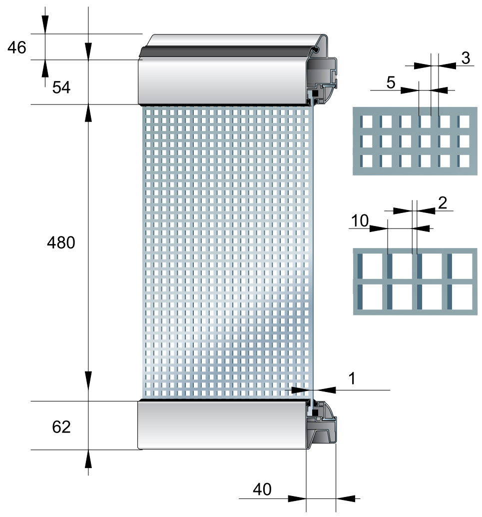
Polycarbonate continous glazing in 3 colours





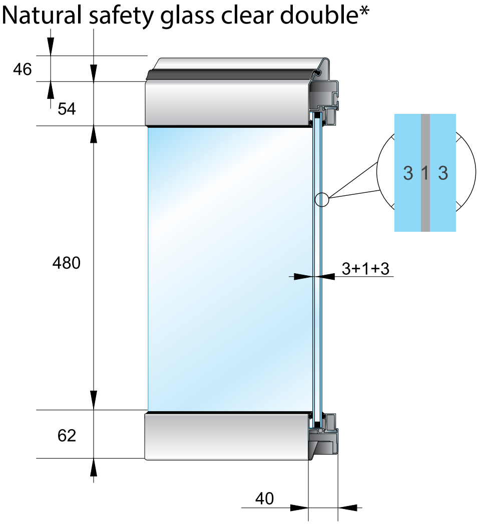
TLT

Perforated, galvanized and coated steel sheet filling

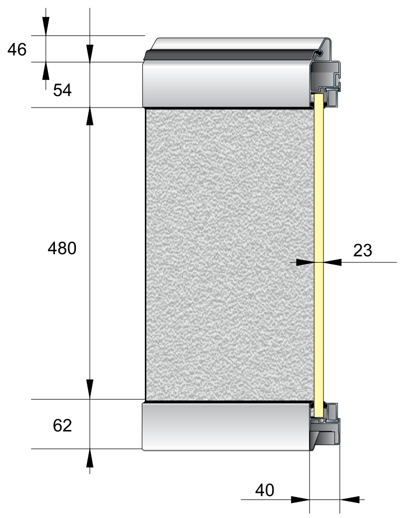


Natural Safety glass

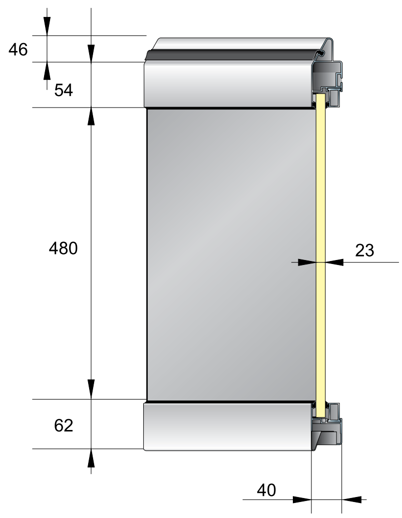
Natural safety glass clear single*
Natural safety glass clear double*



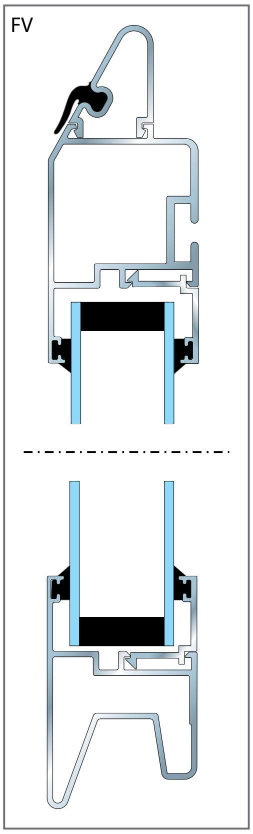
Sandwich filling / stucco

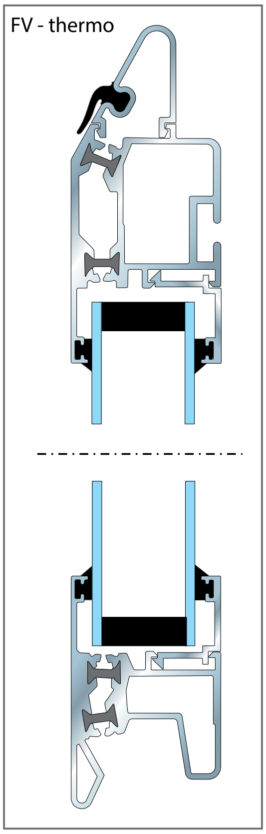


Sandwich filling / smooth



ALU-framed PANEL TYPES



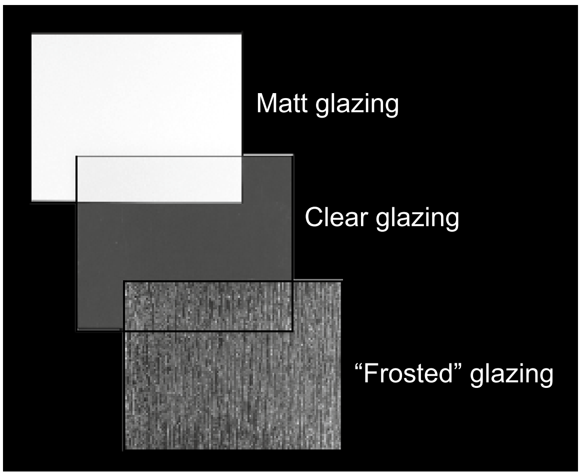


Full vision sections with FV-thermo profile can be glazed in same way as FV-aluminium profile.

Glazing

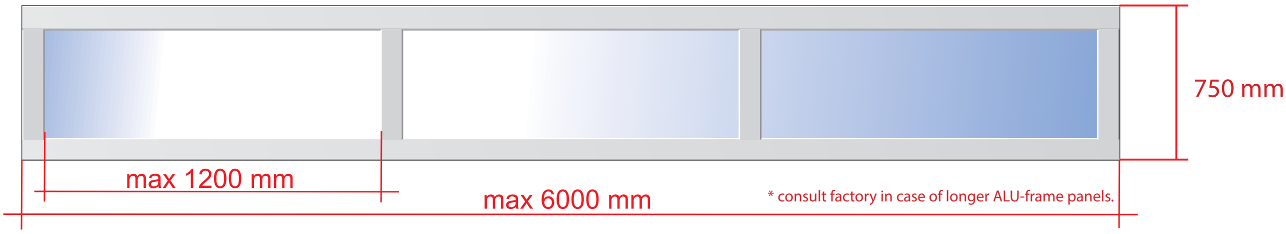
Standard clear acrylic glazing

Scratch-proof clear acrylic glazing

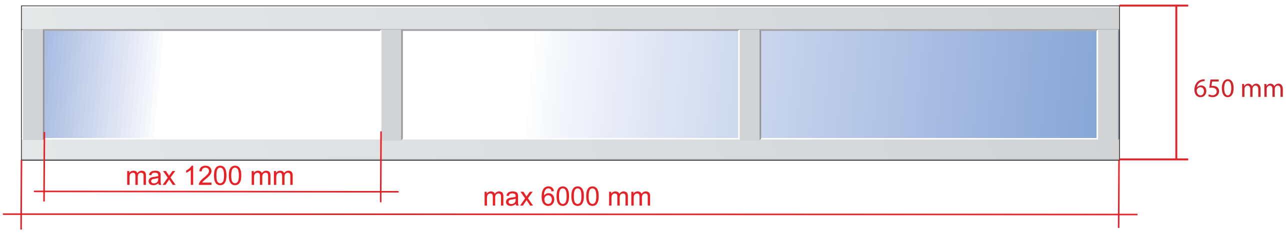


ALU-framed PANEL TYPES

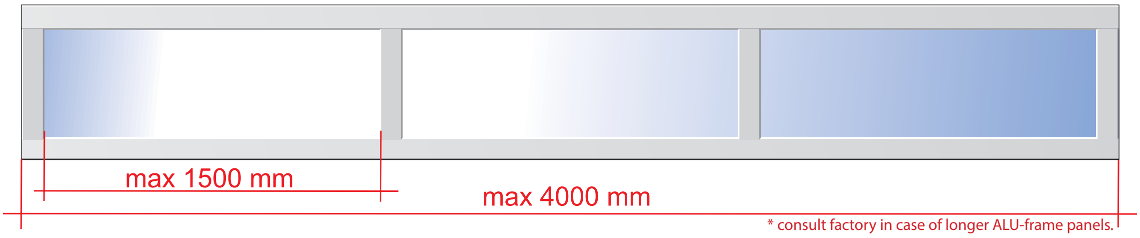
Double insulated Acrylic (Clear / Matt / "Frosted") glazing



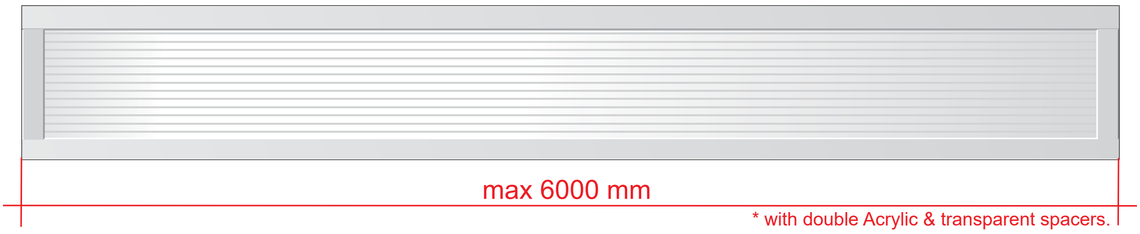
Thermo profiles



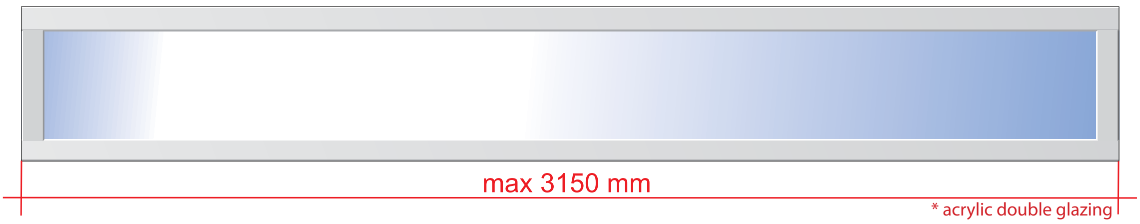
Real Safety Glass glazing

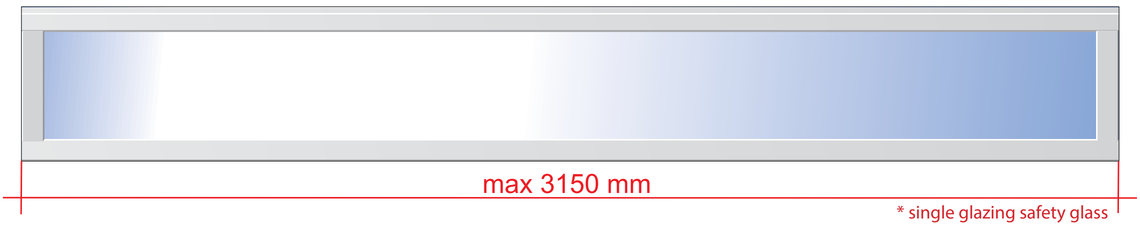


Policarbonate glazing



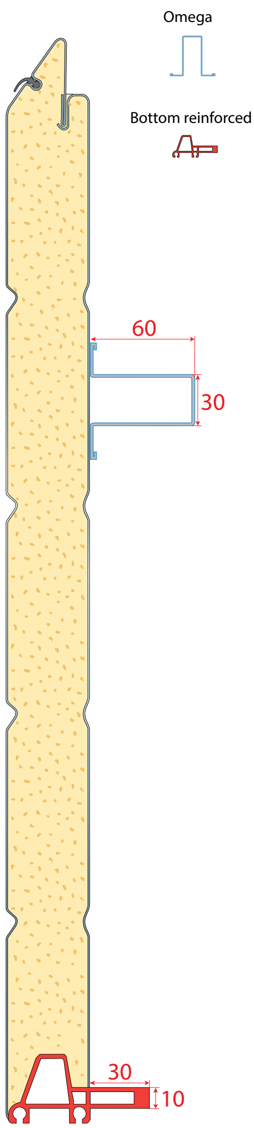
Continous glazing

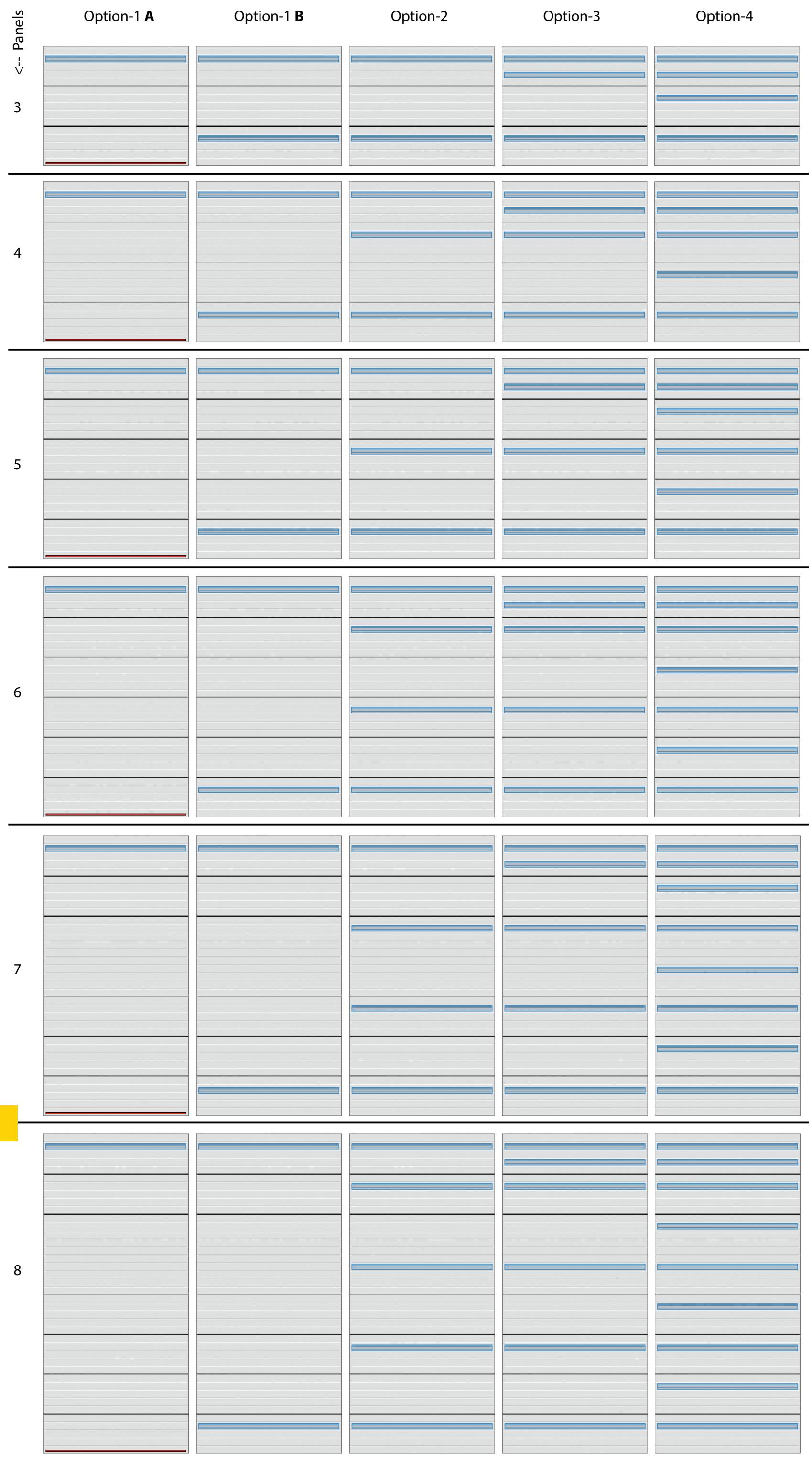




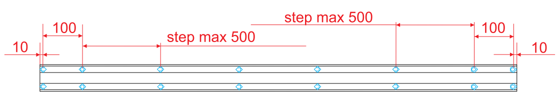
Reinforcement profiles ≤ 8000

Opening width, W	Profile type	Option No.		Main location on panel	Quantity of reinforcements
W≤4500	-	-		-	-
4500<W≤5000	Bottom reinforced + omega	1-A	"Option No. 1-A" is used by default. For cut bottom panel or STD-RM lift type use "Option No. 1-B"	Top of panel (for omega)	1 + 1 = 2
	Omega	1-B		Top partition of panel	2
5000<W≤5500	Omega	2		Top partinion of panel	on every second doorpanel
5500<W≤6000	Omega	3		Top partition of panel	on every second doorpanel +1 on top
6000<W≤8000	Omega	4		Top partition of panel	on each doorpanel + 1 on top



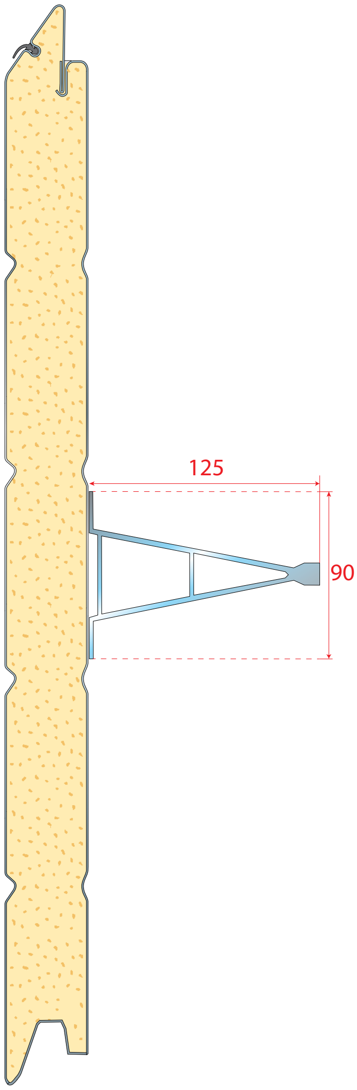


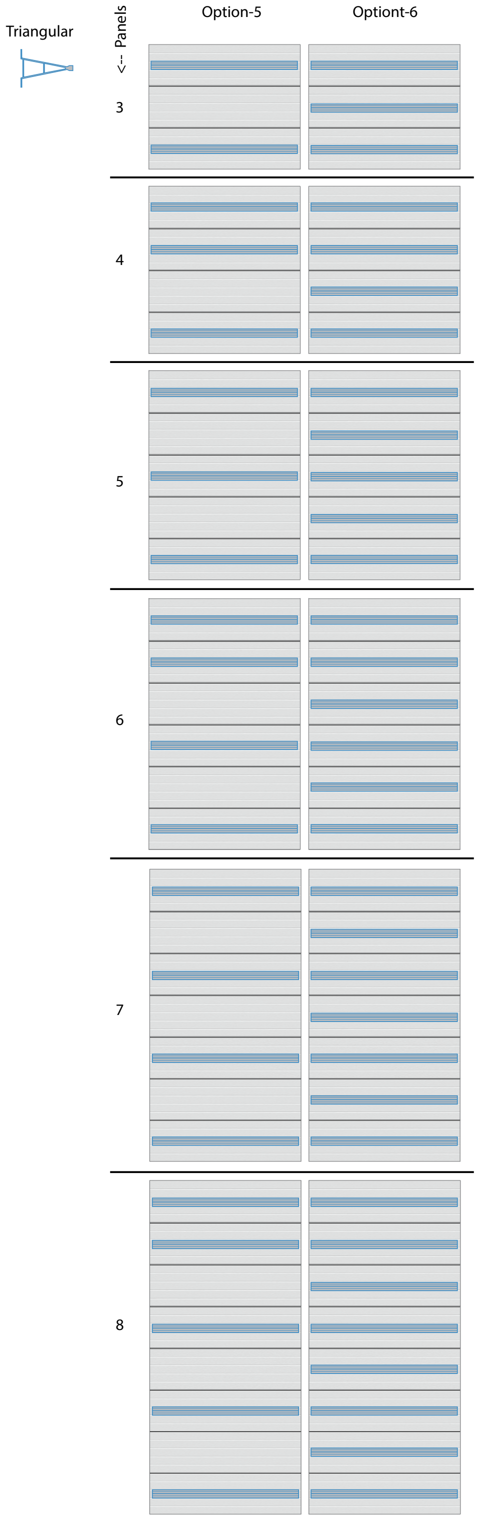
Profile fixing points



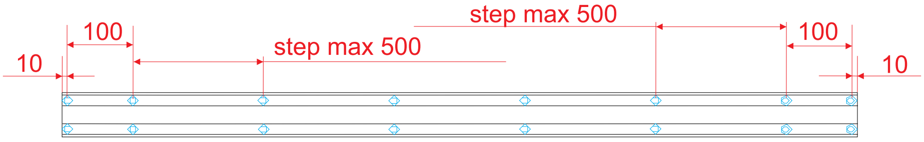
Reinforcement profiles > 8000

Opening width, W	Profile type	Option No.	Main location on panel	Quantity of reinforcements
8000<W≤9000	Triangular	5	Middle partition	on every second doorpanel
9000<W	Triangular	6	Middle partition	on each doorpanel

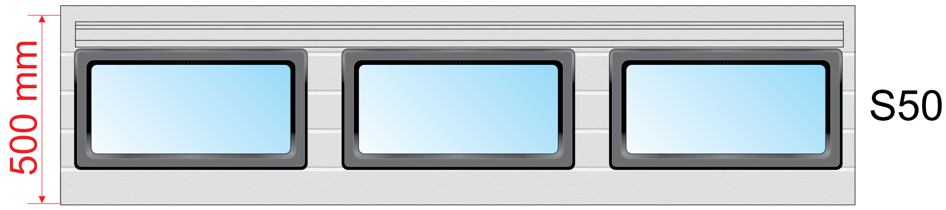


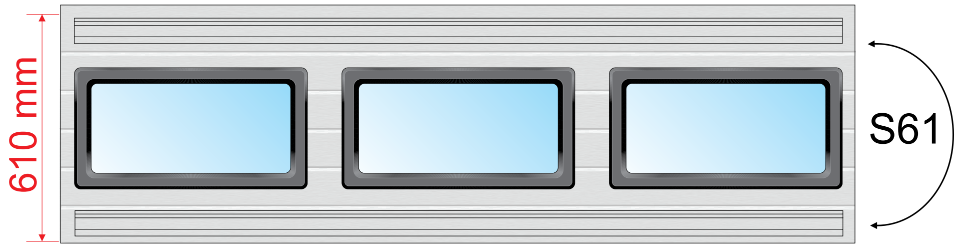


Profile fixing points

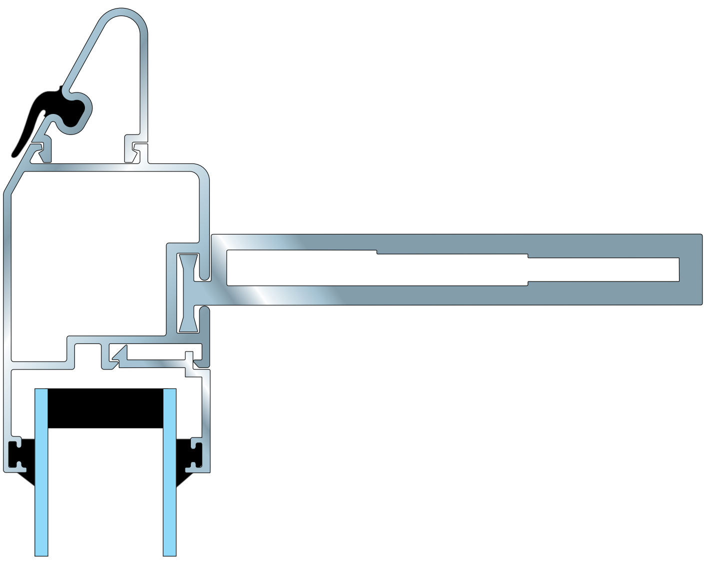


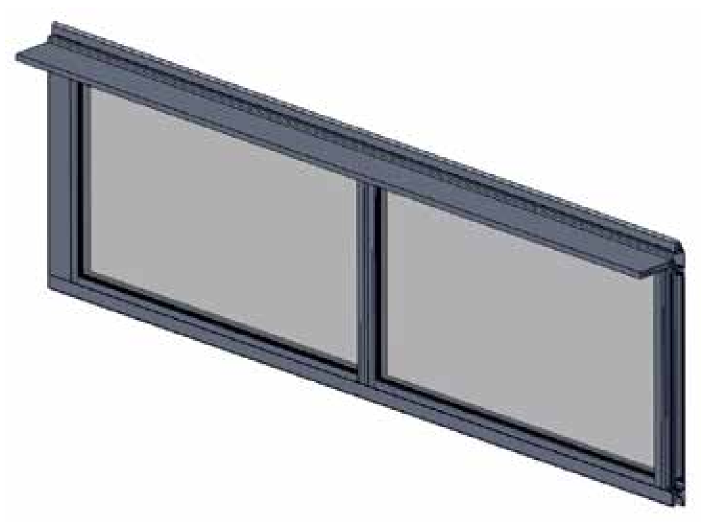
Reinforcement profiles on glazed panels



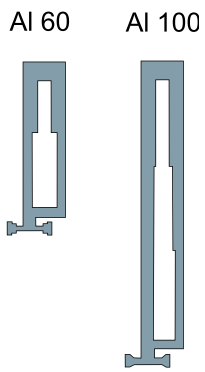


Profile fixing points





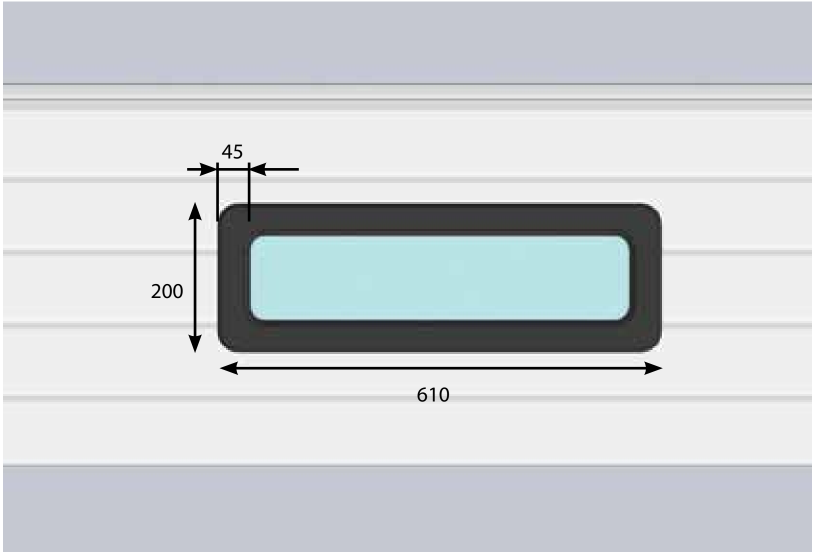
Door panel lenght L	Profile	Quantity of profiles
< 4500	-	-
4501 - 6500	Al 60	on each door panel
> 5000	Al 100	for door with wicket door on 4th panel
> 6501	Al 100	on each door panel

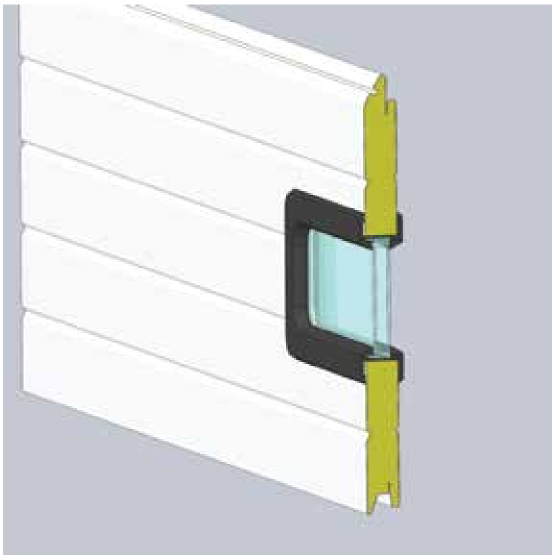


WINDOWS

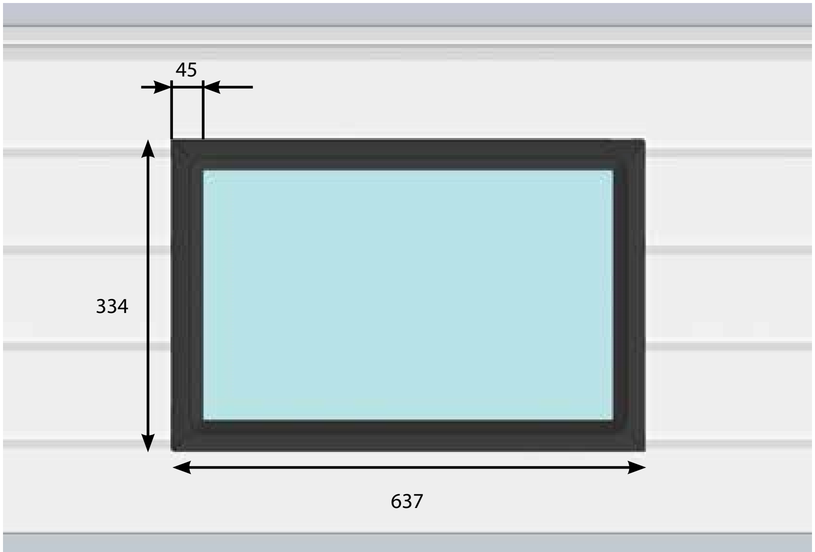
Types of windows

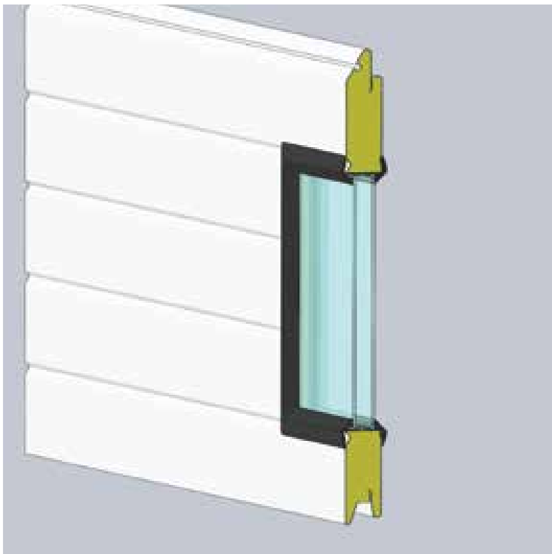
Rectangular narrow



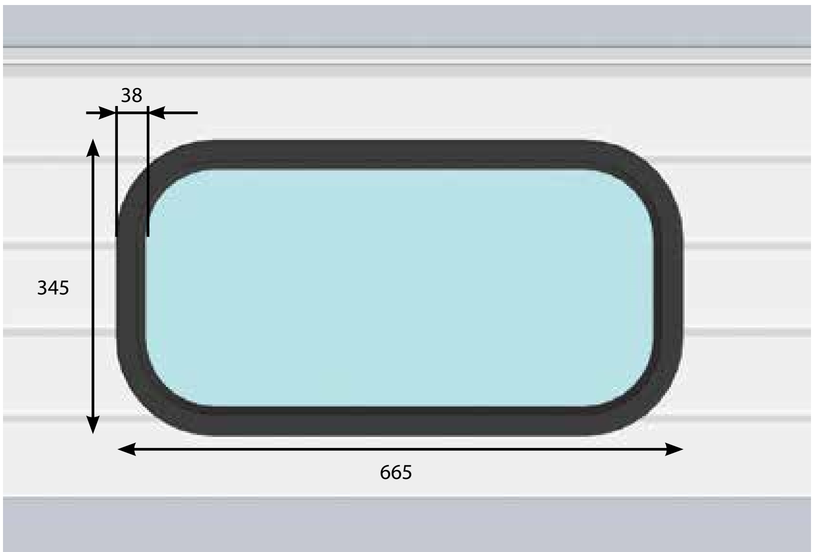


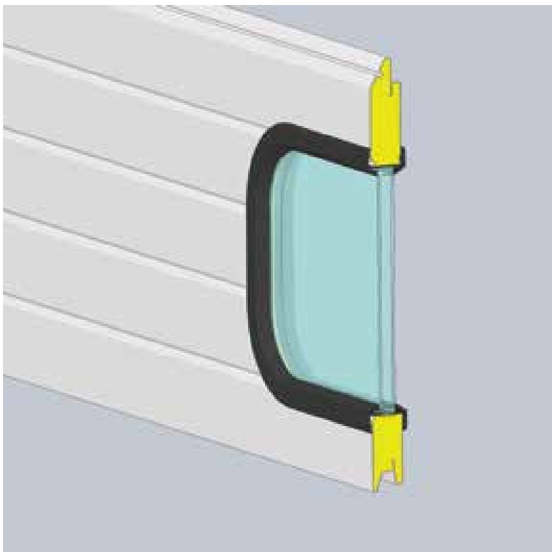
Rectangular





Oval

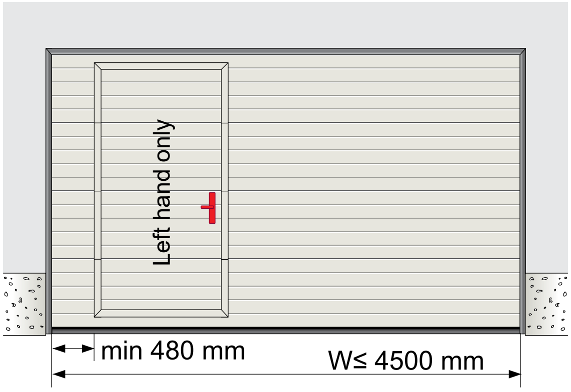


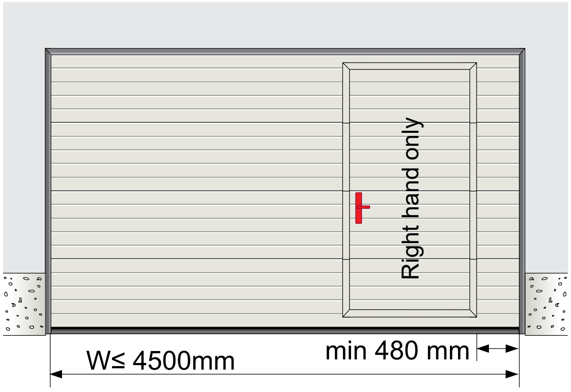


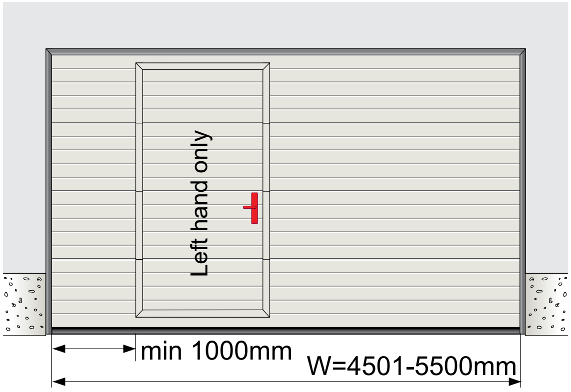
WICKET DOOR

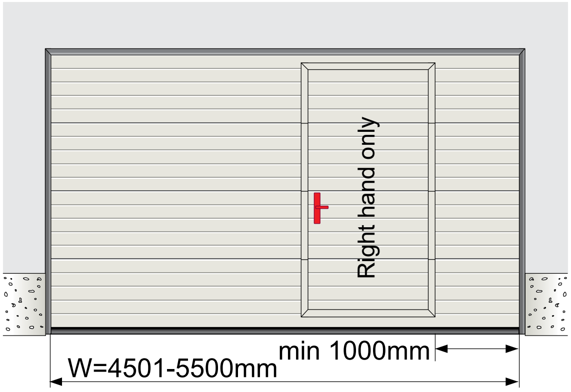
WICKET DOOR

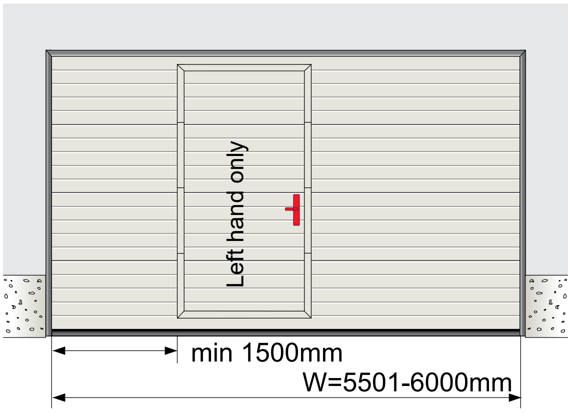
External view

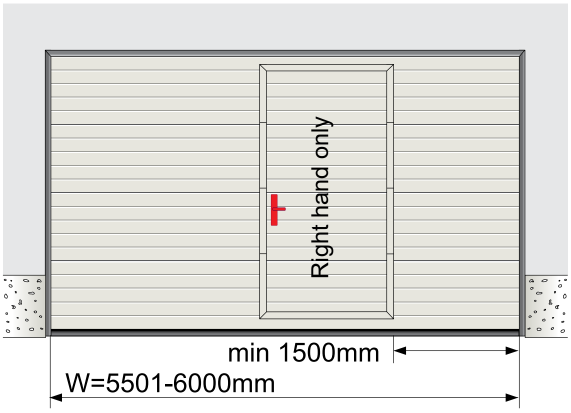




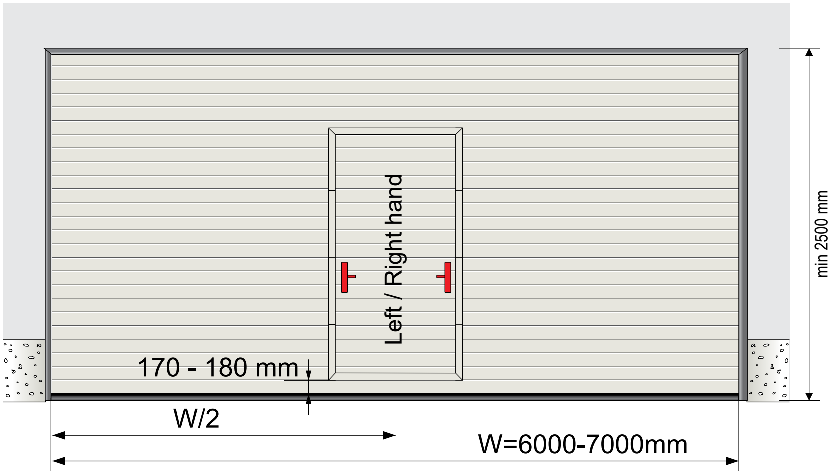




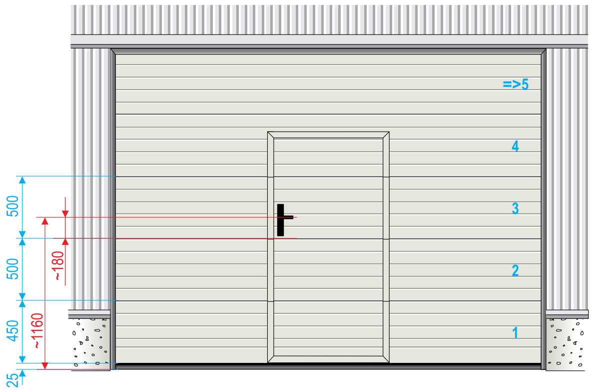


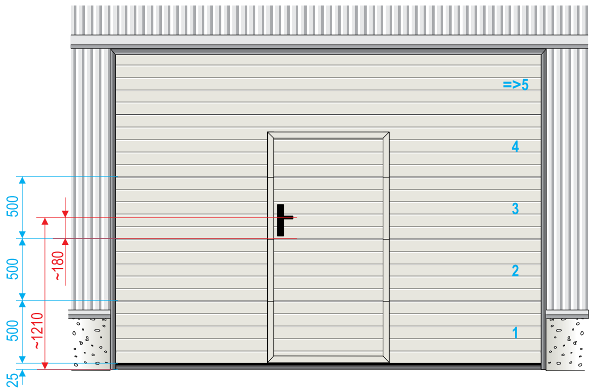


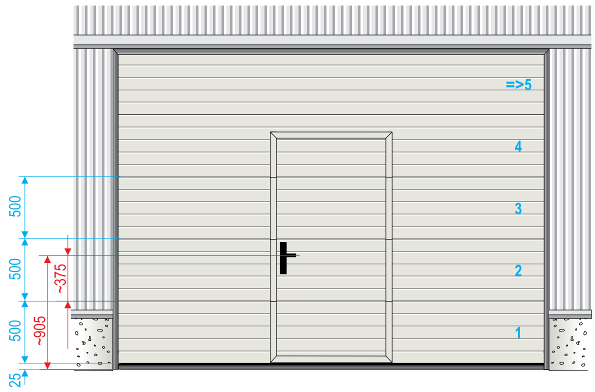
Handle side (L/R) maybe chosen when the wicket door is in the middle

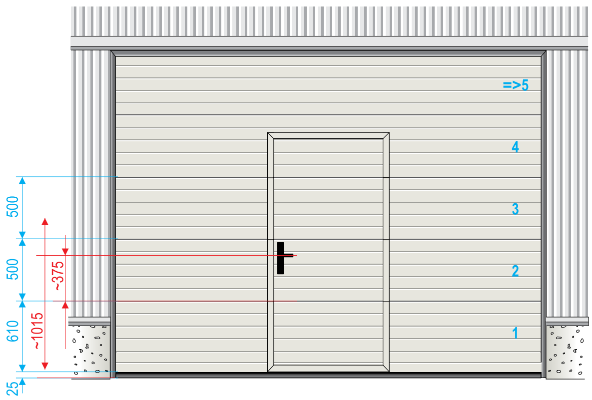


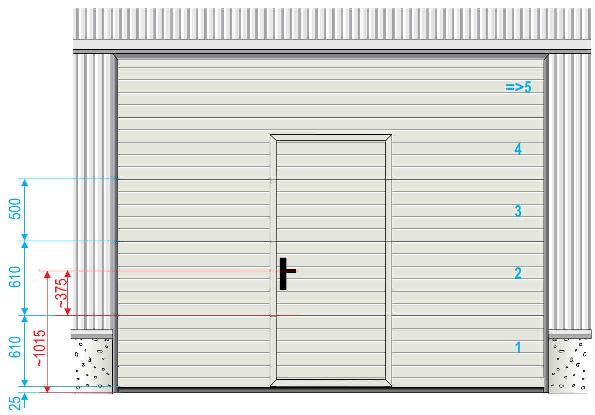
WICKET DOOR







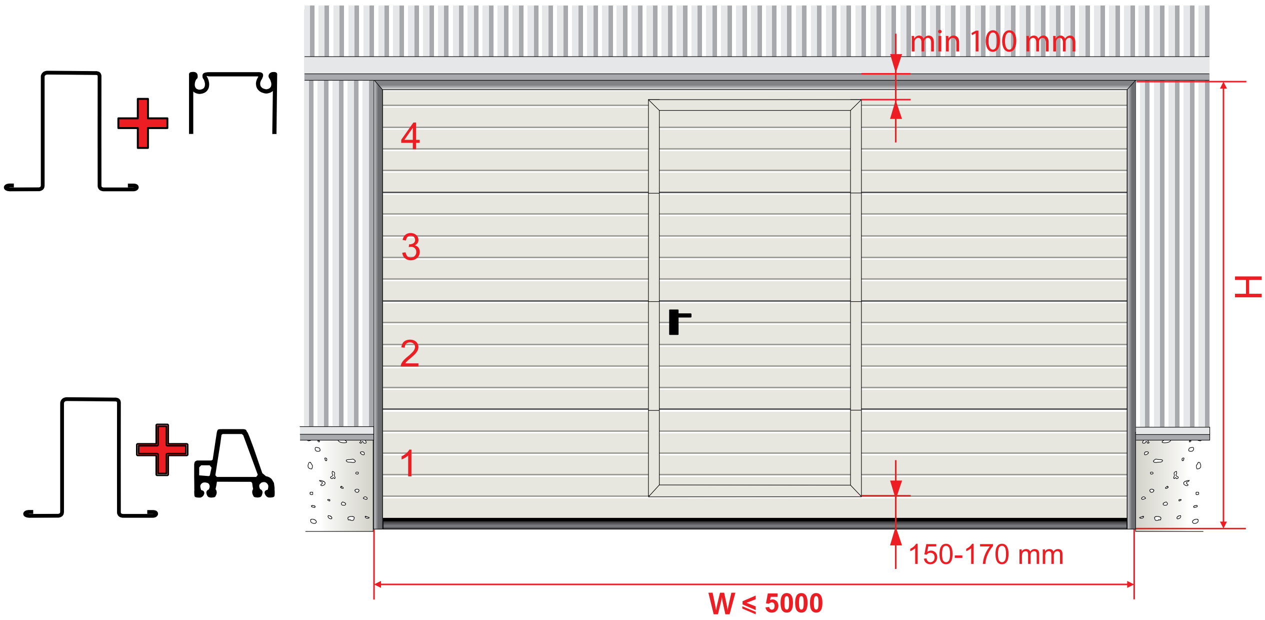




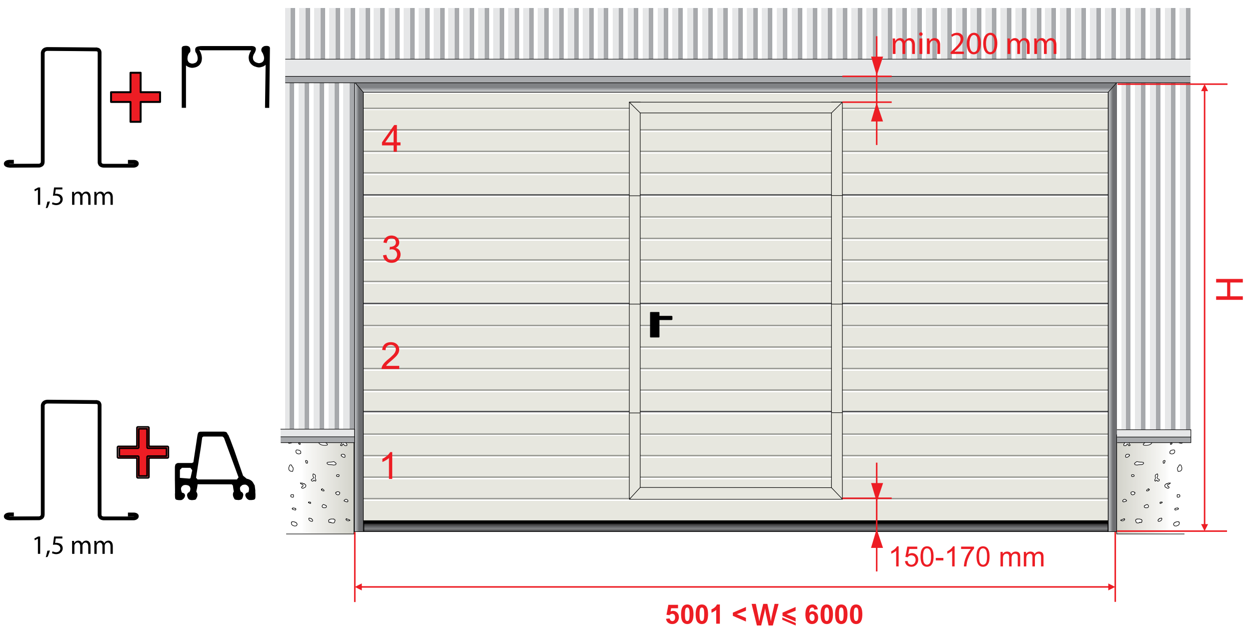
Consult factory for oversized doors

THRESHOLD TYPES

STANDARD THRESHOLD

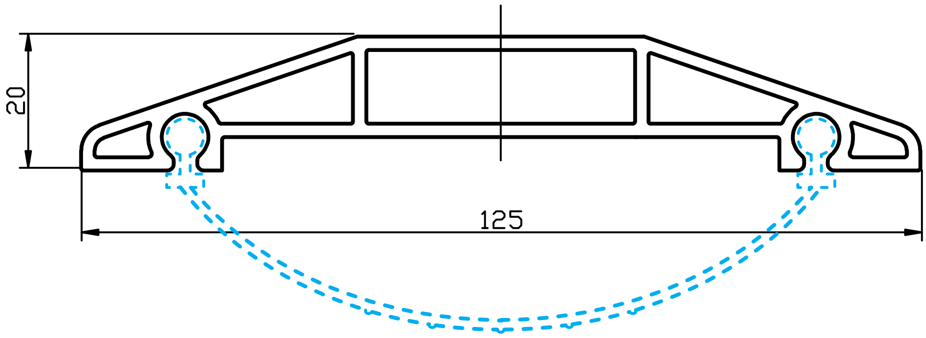


Usable with opto or pneumo safety edge.

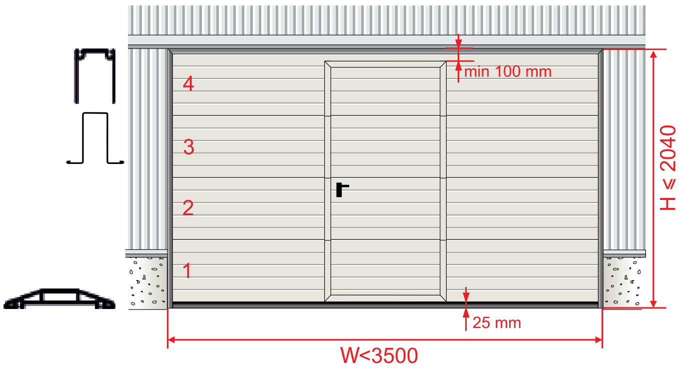


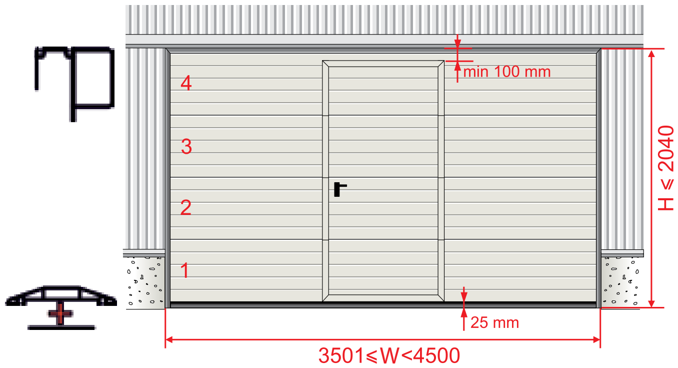
W > 6001 - on request

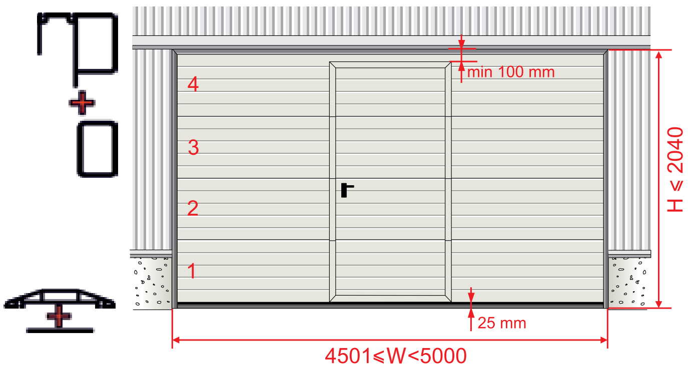
LOW THRESHOLD



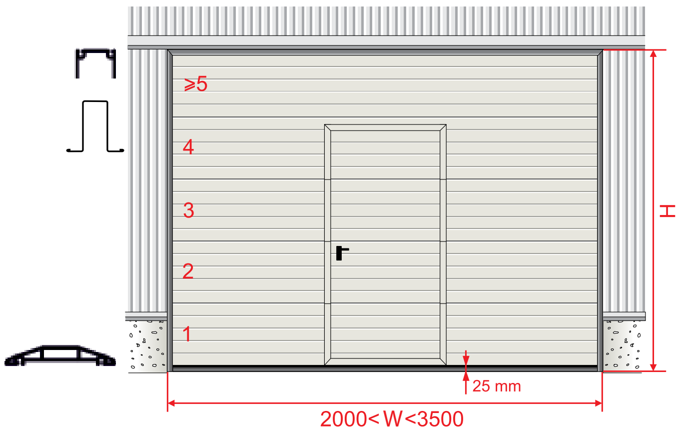
Usable with contact 8,2 kΩ safety edge.

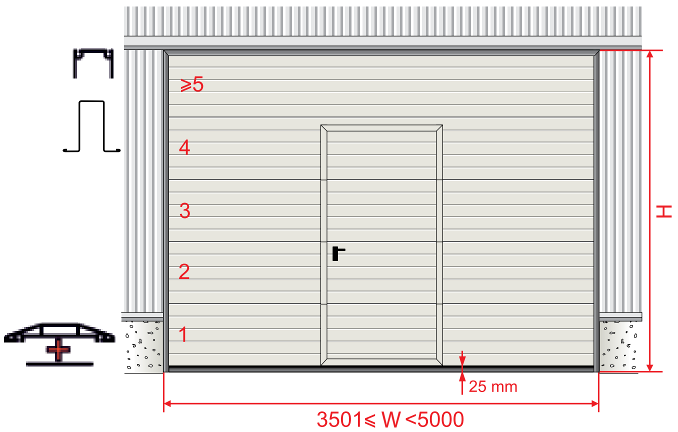






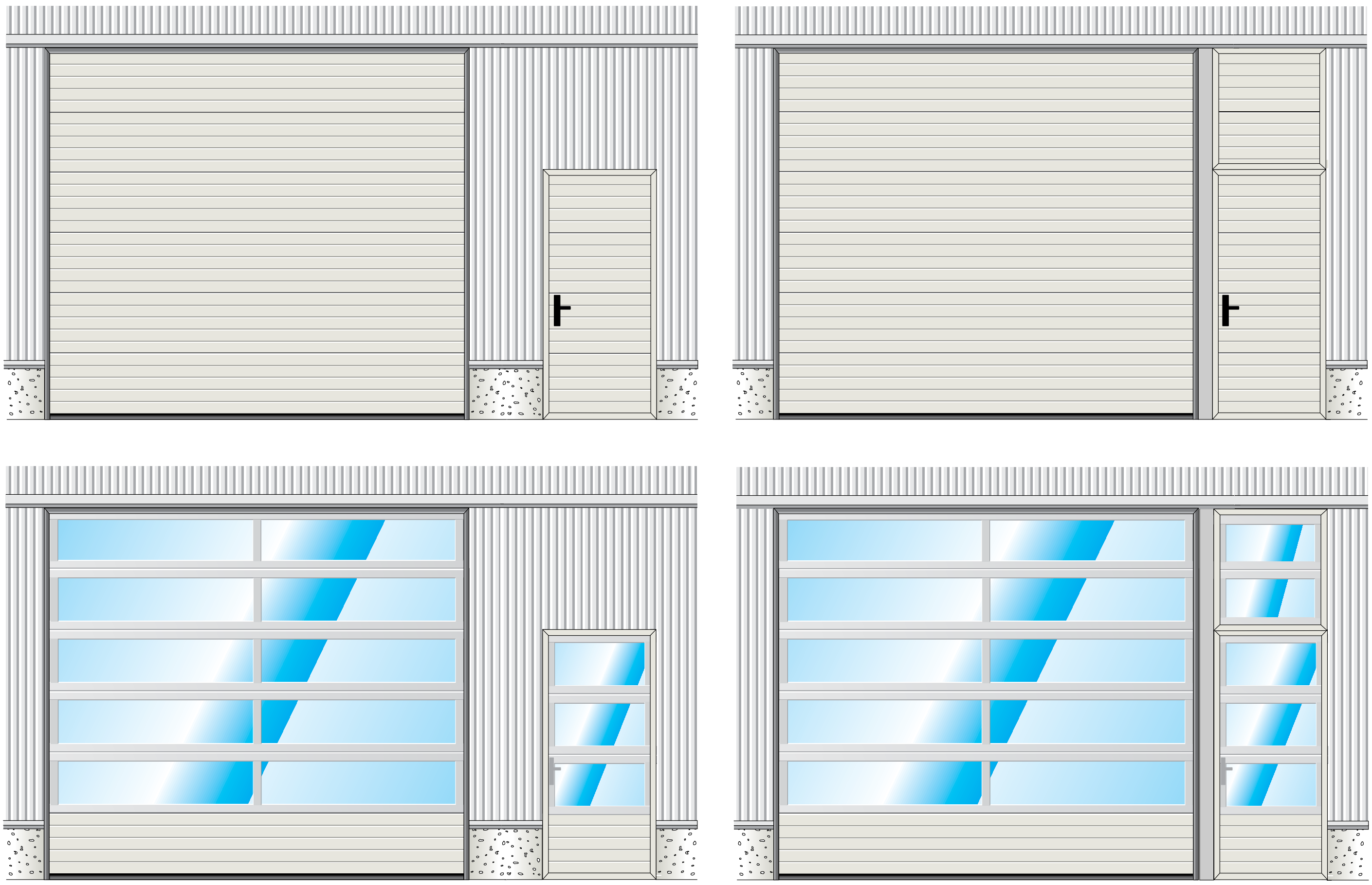
W ⩾ 5001 - on request

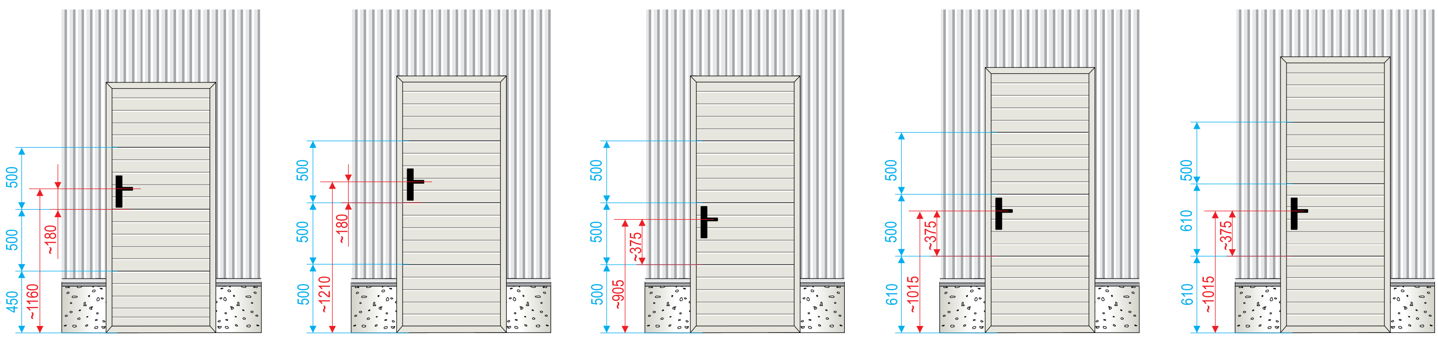




SIDE-HINGED DOORS

SIDE DOOR (SH1)



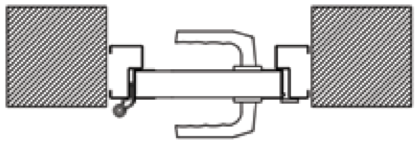


Side door critical dimensions

Consult factory for oversized doors

SIDE DOOR (SH1)

Side doors fitting and opening options

1.


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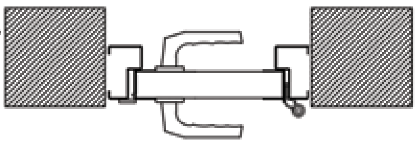
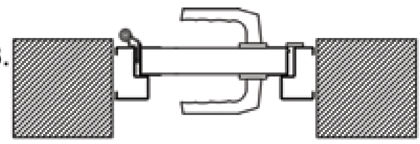


3.


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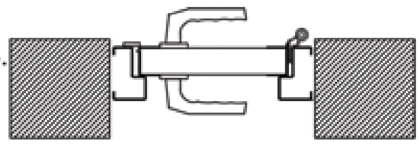

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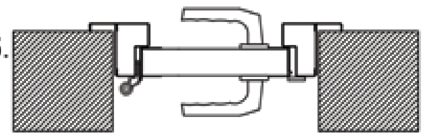

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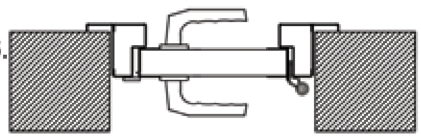

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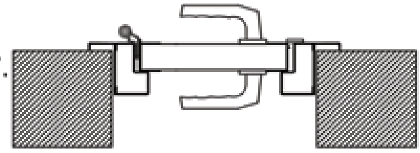

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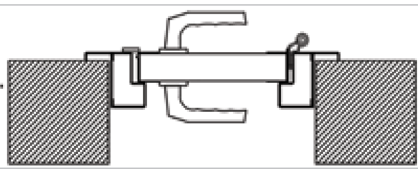

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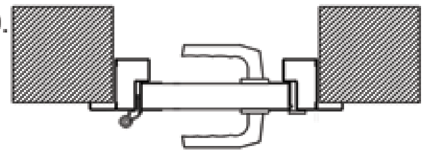

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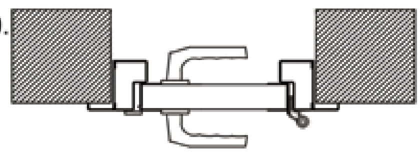

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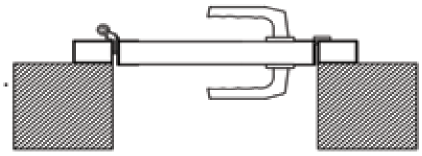

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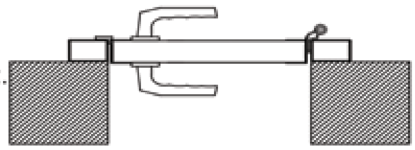

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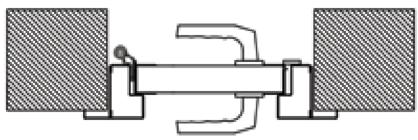

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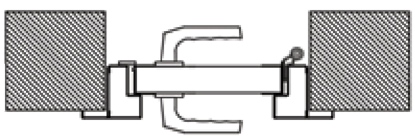
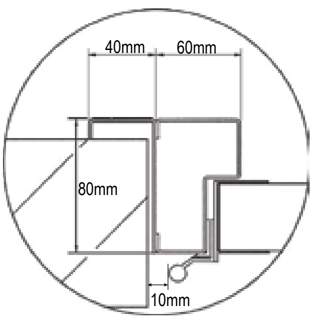
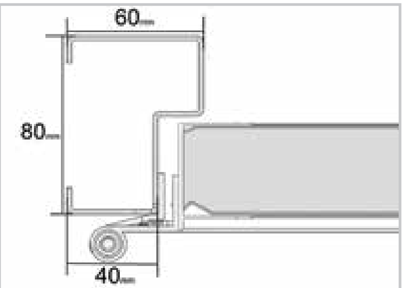
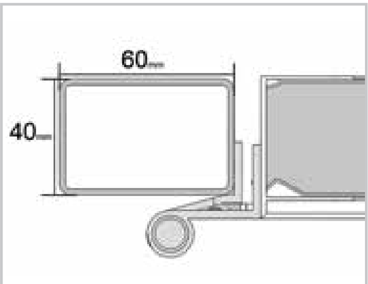


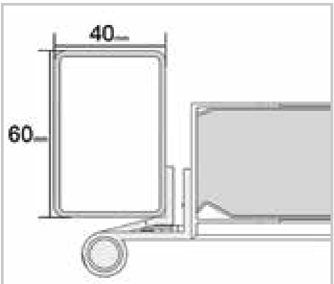
Frame dimensions

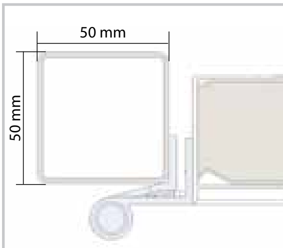


Tolerance of 10 mm in width and height will be deducted from structural opening sizes given.





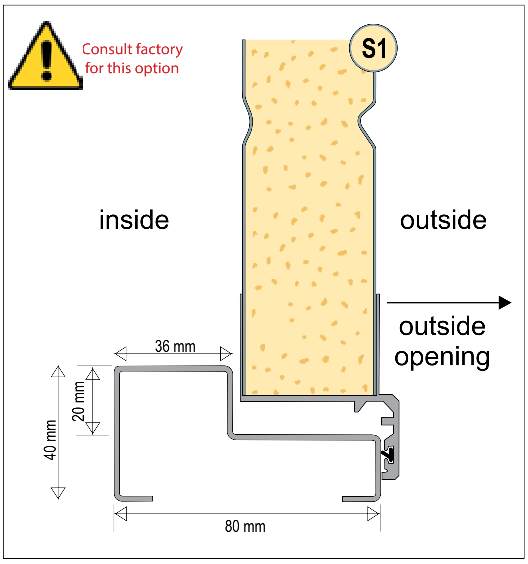


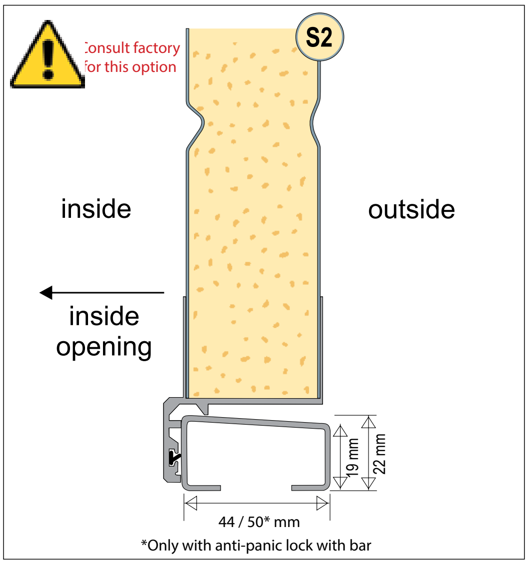


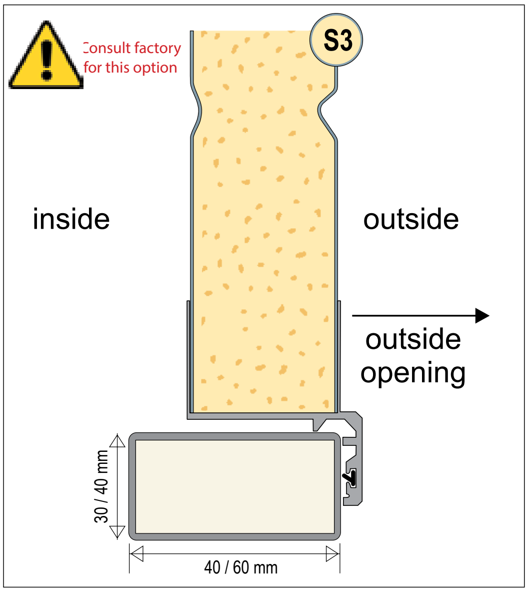
*Only with anti-panic lock with bar

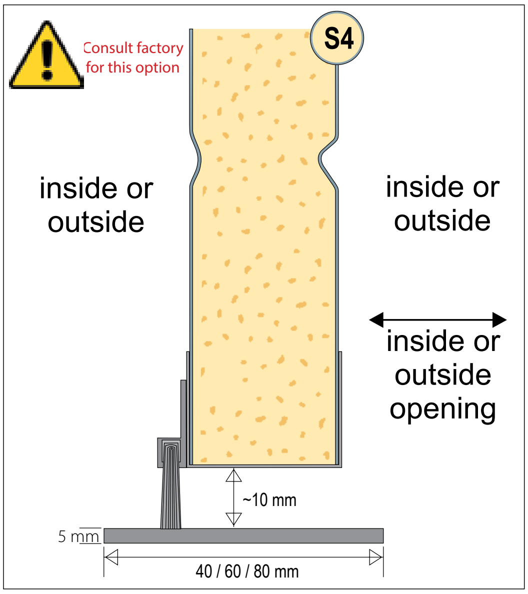
SIDE DOOR (SH1)

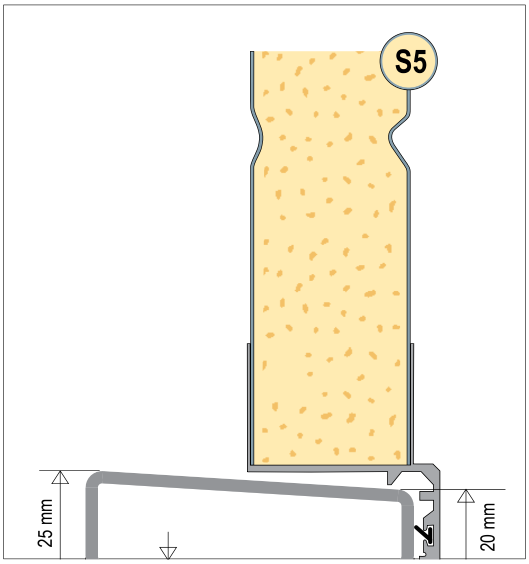
Side doors threshold types

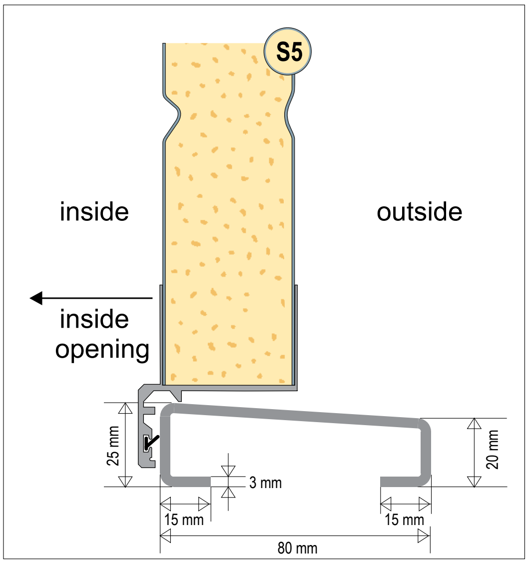




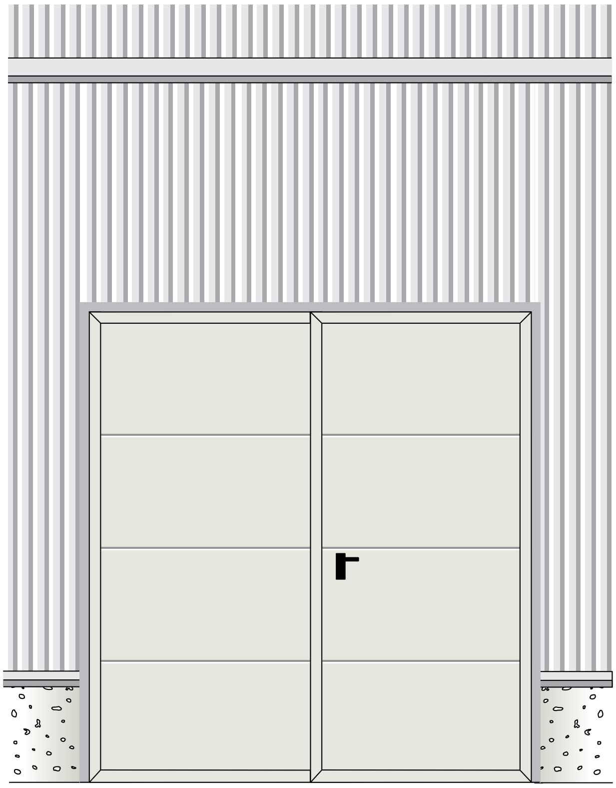


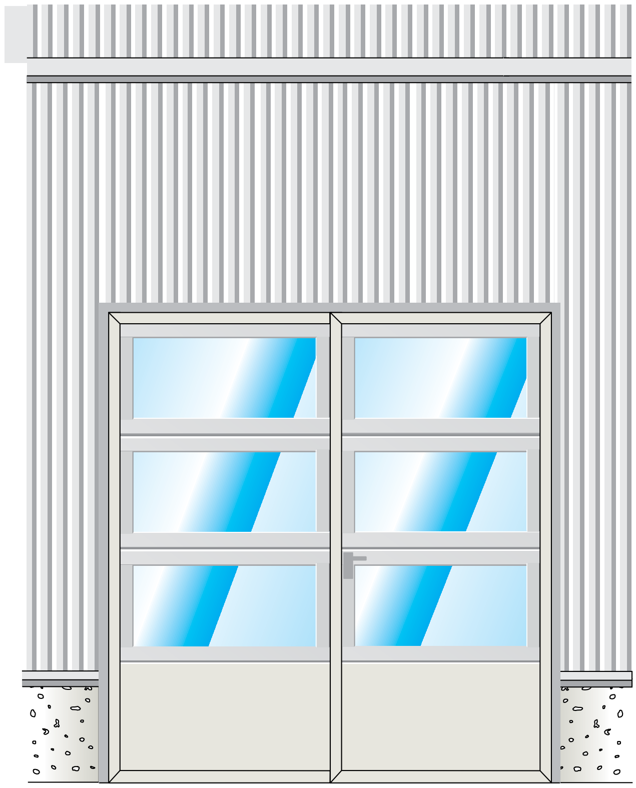


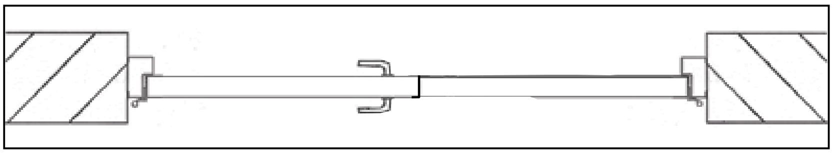




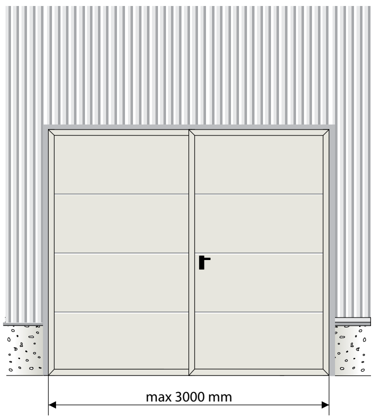
DOUBLE HINGED DOOR (SH2)

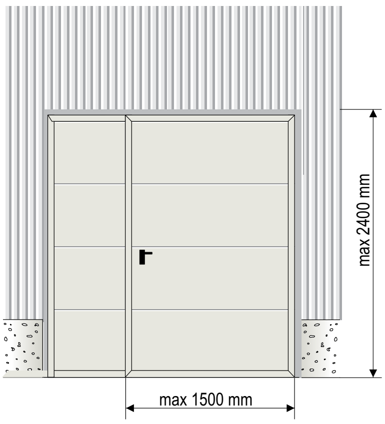


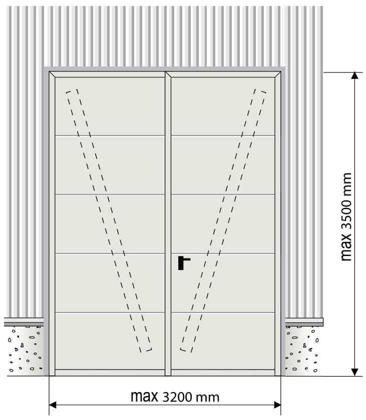




Two leaf doors are recommended when the opening is wider than 1300 mm.



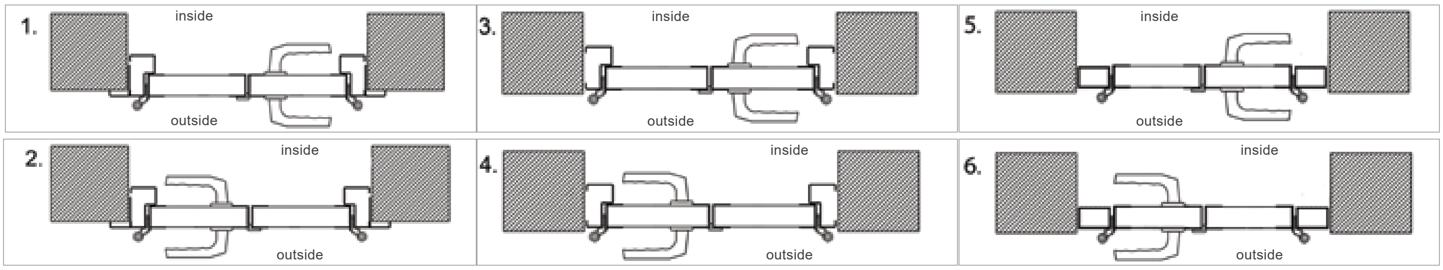




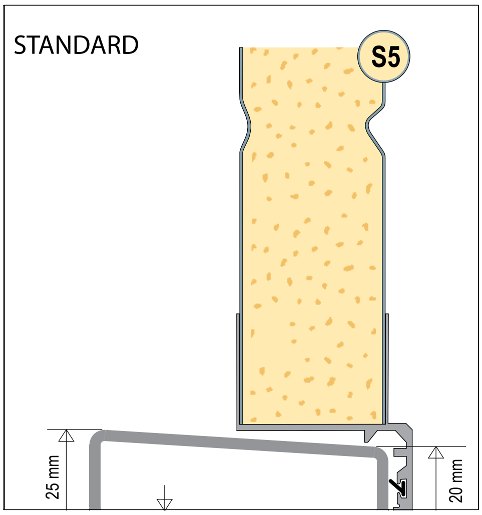
Consult factory for oversized doors

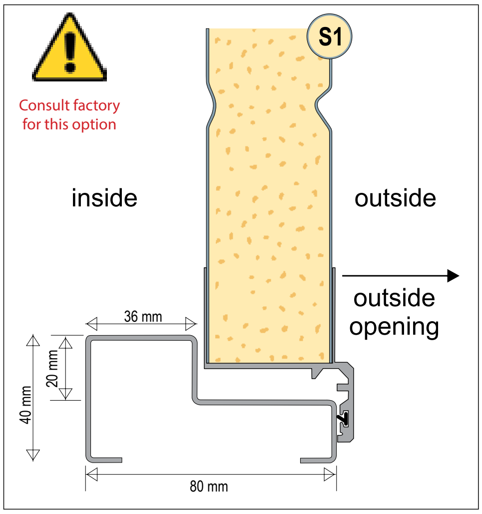
DOUBLE HINGED DOOR (SH2)

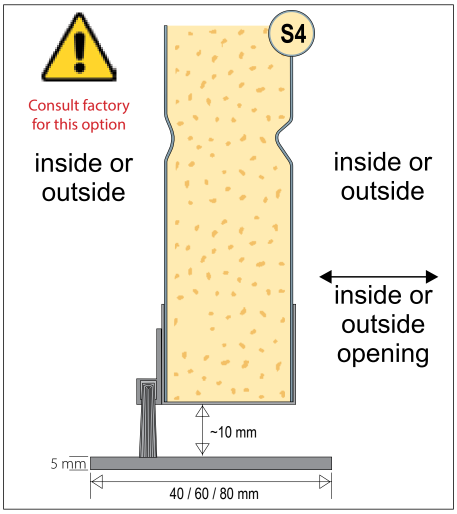
SH2 opening and handling options



STANDARD

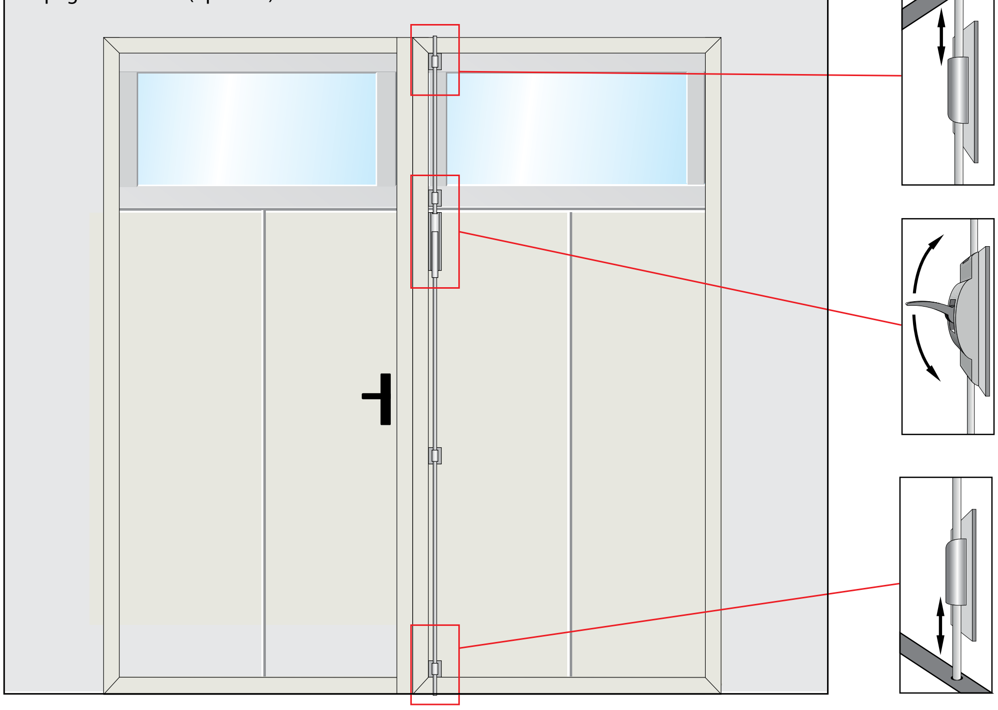






Locking options and door stays

Espagnolette lock (optional)

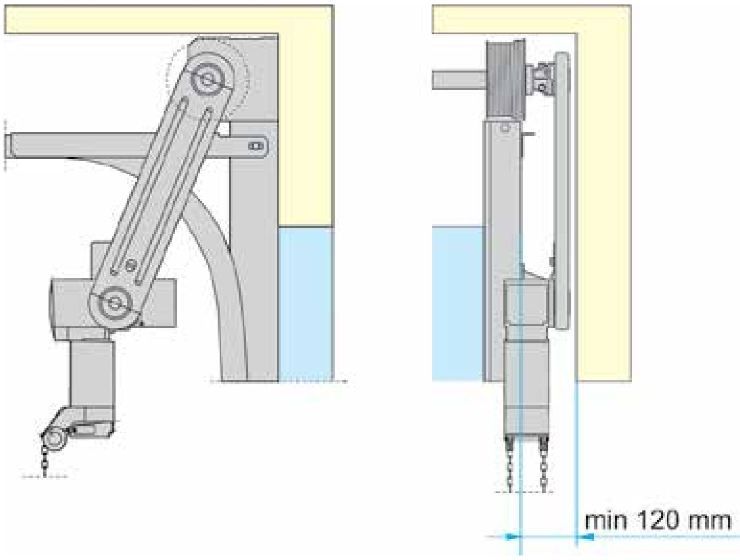


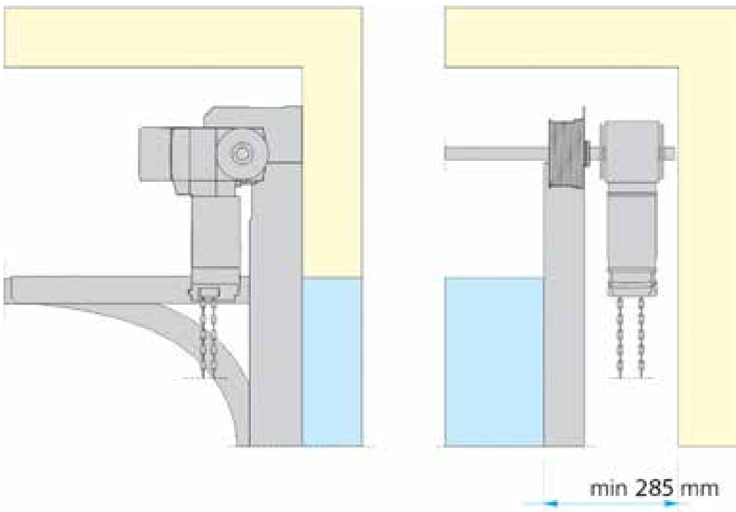
Locking of the fixed door leaf. Top / bottom.

OPERATORS

OPERATORS' FIXING OPTIONS

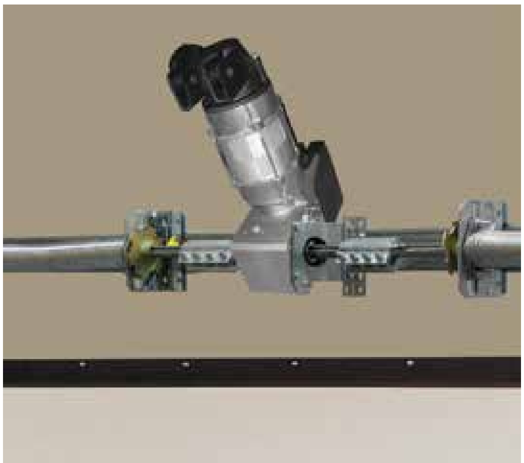
Side fixing

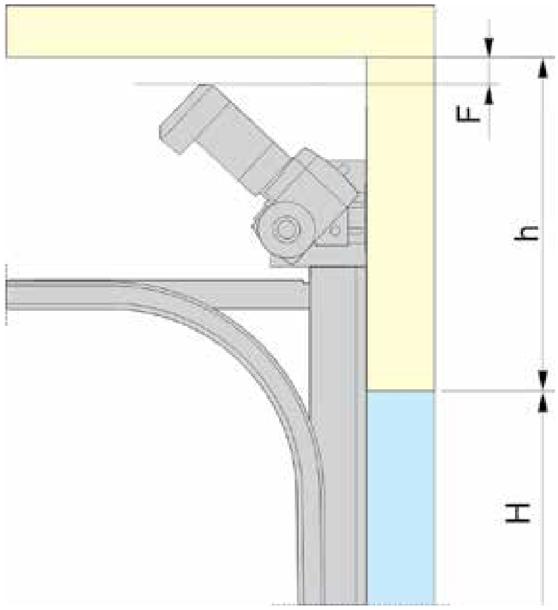




OPERATORS' FIXING OPTIONS

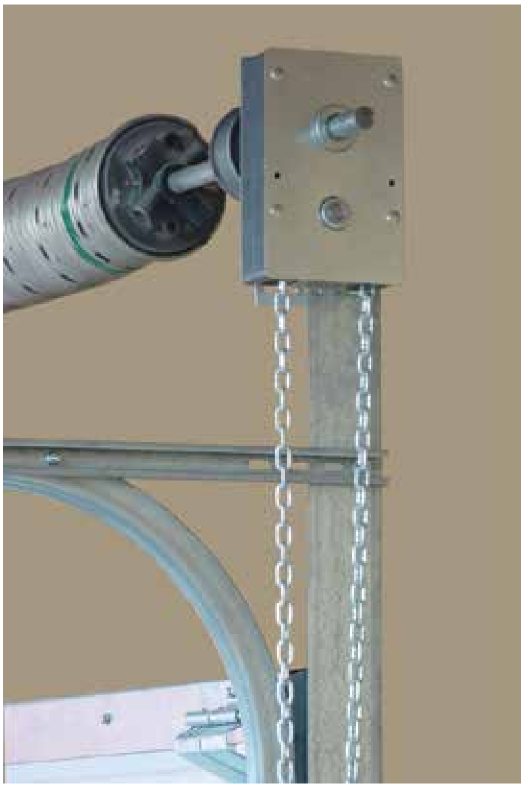
Centre fixing

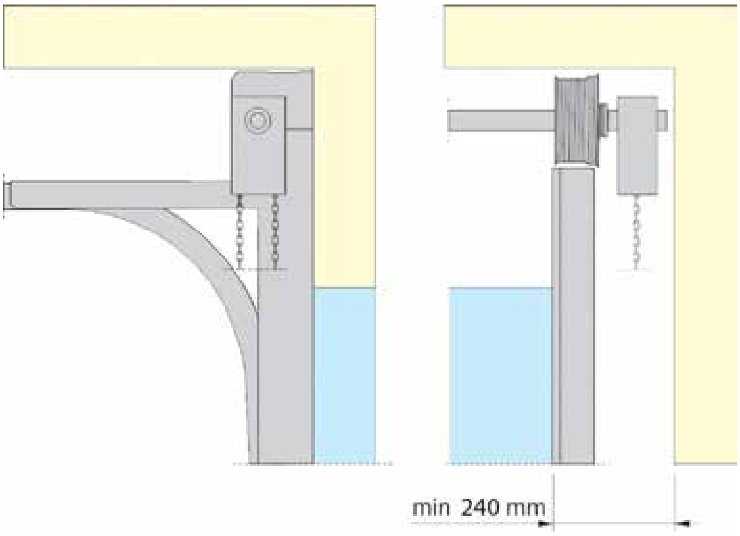




Door height	h	H
H ≤ 3000	580	50
3000 < H ≤ 5030	620	50
5030 < H ≤ 6000	700	50
H > 6000 on request		

Chain hoist





RYTERNA