



International patent



▫ TECHNICAL SHEETS ▫

Sectional Doors

INDUSTRIAL LINE

·IP·

Rev. 02/2016



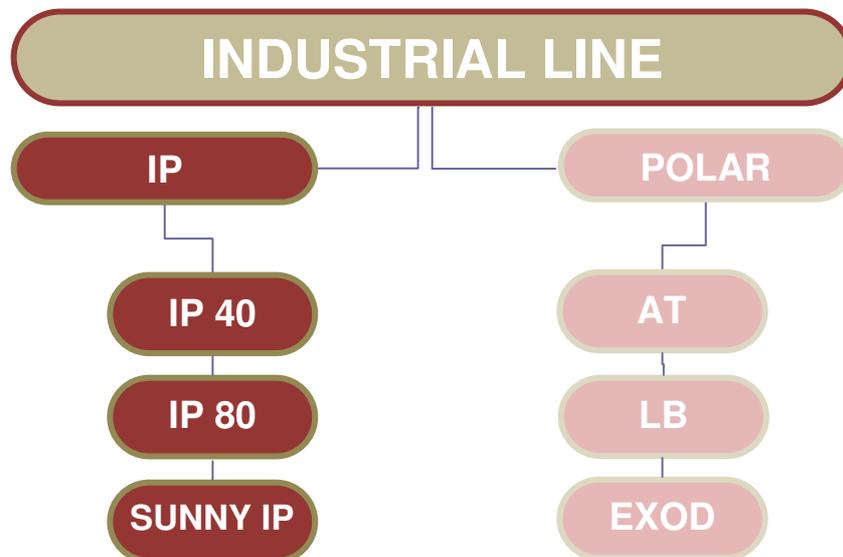
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## PRODUCTION

These technical sheets refer to all versions of **sectional industrial doors** available in Arco Industrie's product range. The company refuses all responsibility on differently made-up and manufactured doors from the doors included in this document.

Arco Industrie's doors production consists of **two lines: POLAR** and **IP**, which have a considerable difference, as the **POLAR** line consists of folding doors, while the **IP** line consists of sectional doors.

Furthermore, the **IP** line itself bases on three different product categories: the **IP 40**, made up of a 40 mms insulated panel, the **IP80**, having a 80 mms insulated panel, and the **SUNNY IP**, which is made up of aluminium sections and for which different kinds of frames can be used.



## DESCRIPTION

This door can be opened vertically and it is made up of horizontal panels that run along lateral guides; moreover, it is fitted out with articulated joints placed among the panels, it bends when approaching the ceiling and it places itself parallelly to it, letting the passage opening free.

## INSULATED PANEL

40 or 80 mms thickness, 610 mms height, it has a steel double face, that is previously galvanized through the Sendzimir process and primer treatment, and then painted with polyester resins through the Magona process. Such treatment ensures the plates surface resistance to 1000-hour exposure to salt fogs. Inside, at its upper and lower sides the panel is equipped with reinforcing plates on which the hinges 'screws are fixed. The external structure of the panels has horizontal staves with a 100mms gap made of 5/10 embossed plate.

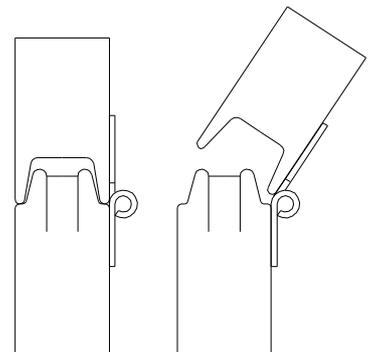
PANEL'S DETAILS	thickness 40	thickness 80
WEIGHT kg/ml	5,5	6,5
U ( W / m <sup>2</sup> K )- with joint	0,57	0,29

## THE JOINT SYSTEM

The articulated joint between the panels is made through hinges, placed inside and let them rotate. There is also an airproof seal (EPDM) between the panels.

## FILLING

The insulated panels are filled with B2-class, self-extinguishing and CFC-free (Chlorine, Fluorine and Carbide) foam polyurethane thickening 48kgs/m<sup>3</sup>. Density 40 ± 4 kg/m<sup>3</sup>. Thermal conductivity λ = 0,023 W/mK aged/made according to EN 13165:2001 C5 rule.



## SUNNY IP PANEL

It is made of anodized- or painted-aluminium shapes and of single-face methacrylate glasses, and it is available either in double glazing or honeycomb versions. The outside and upright frames house the sealing gaskets and the glasses, allowing different possible compositions. The panoramic panel can be assembled as a glazed single section in a IP-type door or it can be fixed in a multiple assembly together with other insulated panels, following the structure of the Sunny model.

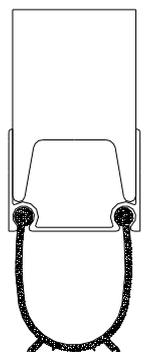
## SEALS

The seals supplied with all the product lines are made of EPDM and PVC and resist to ageing; they are:

- middle seal between the panels placed in a row;
- lower seal gasket;
- upper gasket for door sealing near the lintel;
- upright seals, housed on the side vertical rods.

## SEAL PROFILE

To finish off the bottom side of the door, an aluminium profile is mounted. It is on top of the panel and is inserted into the lower seal. Into the upper panel is inserted a covering cap which finish off the panel cut custom-made.



## GUIDES

They are made up of a galvanized, cold-rolled sheet thickening 15/10 and have a shape suitable for the side trucks sure housing.

## SIDE SUPPORTS

They are made of pressed steel in Teflon wheel and inside full ball bearings, which assure softness and durability.

## SIDE PLATES

Made of pressure-bent steel, they support the torsion shaft and the entire door structure. Every sliding system has its own plate.

**SPRINGS** Made of torsion soft steel and electrolytic zinc-coated (thick. 10  $\mu\text{m}$ ). They are realized through a steel wire and they are placed on a sunken shaft in the upper part of the guides which is connected straight to the pulleys that wrap up the wire.

## PULLEYS

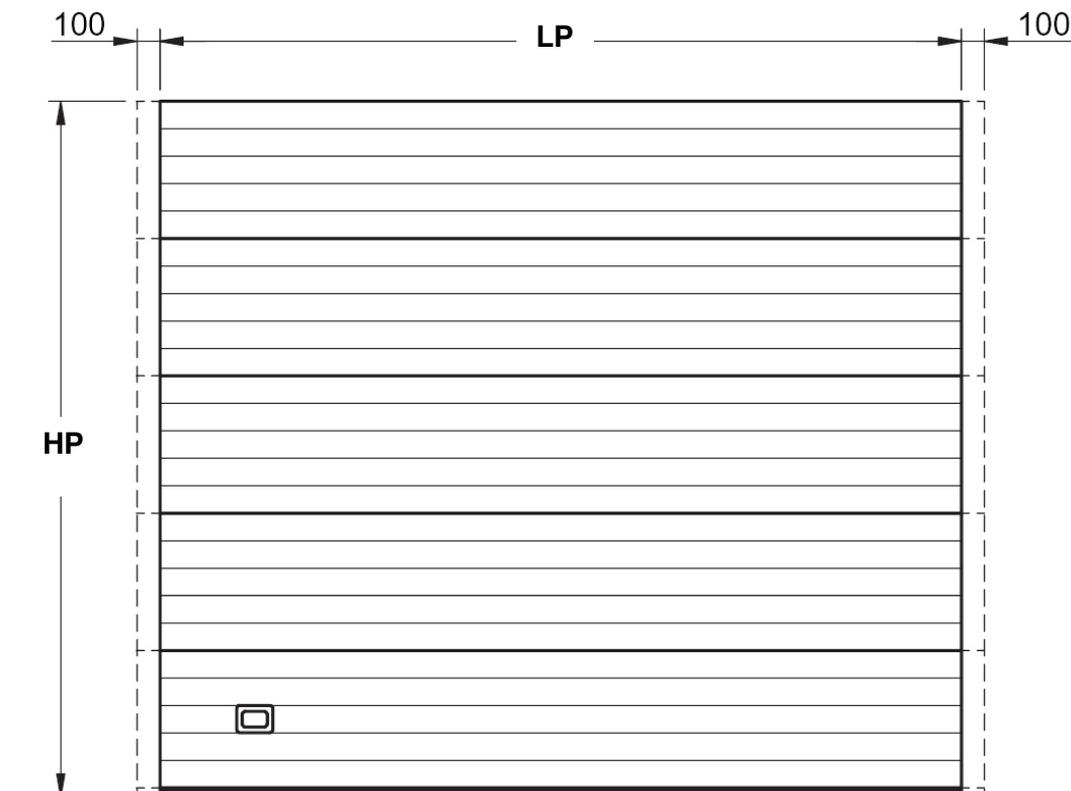
Made of pressure-melted steel and provided with helical grooves for the housing of the steel cables used to lift the door. They can have different shapes depending on the sliding system.

**SAFETY DEVICES** Falling-proof and finger-protection devices aimed at the immediate lock of the door sliding in case the traction cables or the torsion springs are broken.

**LOCK** it is a side and bolt lock, and it can be opened from outside through a Yale cylinder lock.

## AUTOMATION

The 24Vdc electromechanical motor reducer equipped with a magnetic encoder, whose limit switches don't need to be adjusted, is connected straight to the springs' shaft and doesn't need gears or chains.



## DOOR LEAF DETAILS

**IP 40:** it is made up of panels heightening 610 mms, thickness 40 mms.

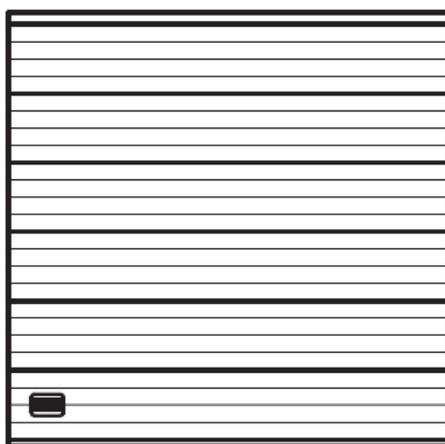
**IP 80:** it is made up of panels heightening 610 mms, thickness 80 mms.

The maximum possible width is 8000 mms. All dark-coloured panels widening over 5000 mms tend to bend towards the outside if exposed to the sun, due to the typical heating of the sheet; for this reason, some stiffening omega are supplied for alternating panels with an opening width (LP) over 5000 mms and for all panels having an opening width over 6000 mms.

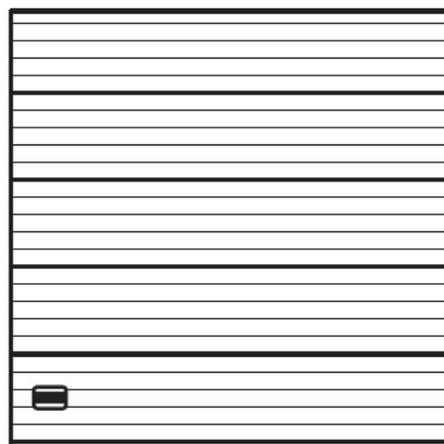
**SUNNY IP** ( only IP40 ) : It consists of panels completely made of glass and shared out equally by height, which can have the sizes that you wish. The maximum allowed sizes for these models are: LP (opening width) 6000 mms and HP (opening height) 5400 mms. The wicket door can be set in Sunny panels only if their width doesn't exceed 5000 mms. Any different requirement from the above-mentioned standards will be considered singly by our technical department. All panels are listed downside up.

We basically need the following sizes to build the door leaf:

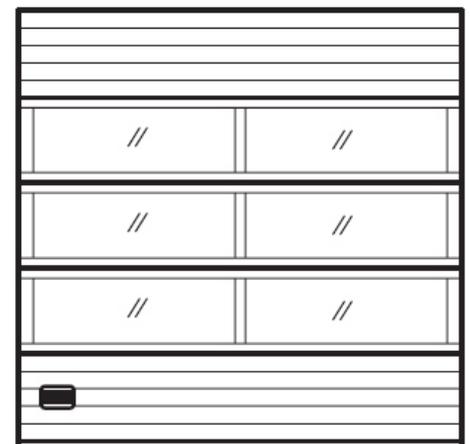
- opening width (LP)
- opening height (HP)



IP 40

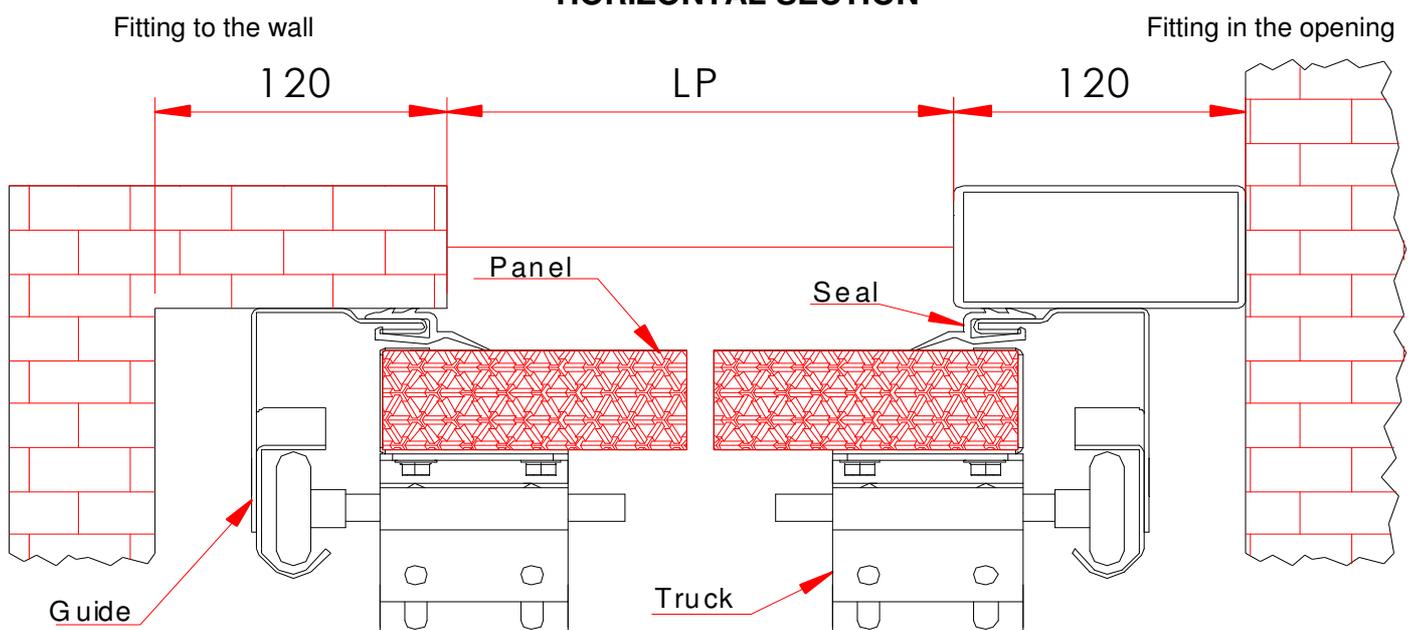


IP 80



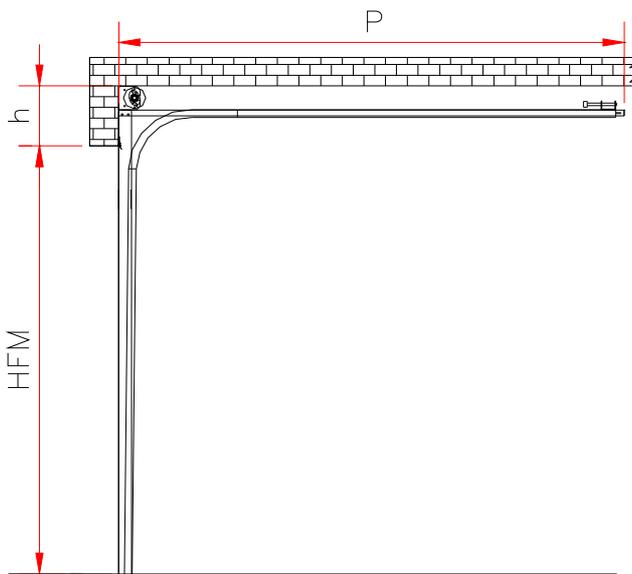
SUNNY IP

## HORIZONTAL SECTION



## STANDARD SLIDING

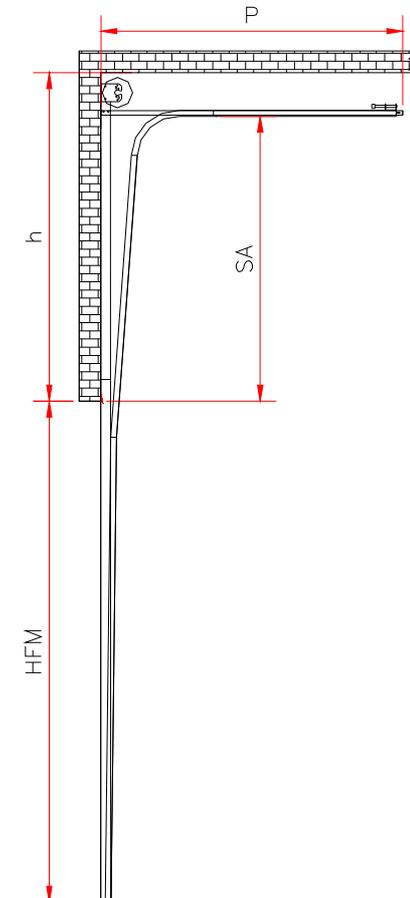
**SN**



SN						
HFM max	5400 mms					
HFM	h	Side room needed				
		STD	Motor	Idler Rollers kit	Winch 1:1	Winch 1:3
≤4500	420	120	350	250	200	250
≤5400	510	120	350	250	200	250
P	HFM+750 mms (IP40) / HFM+790 mms (IP80)					

## HIGH SLIDING

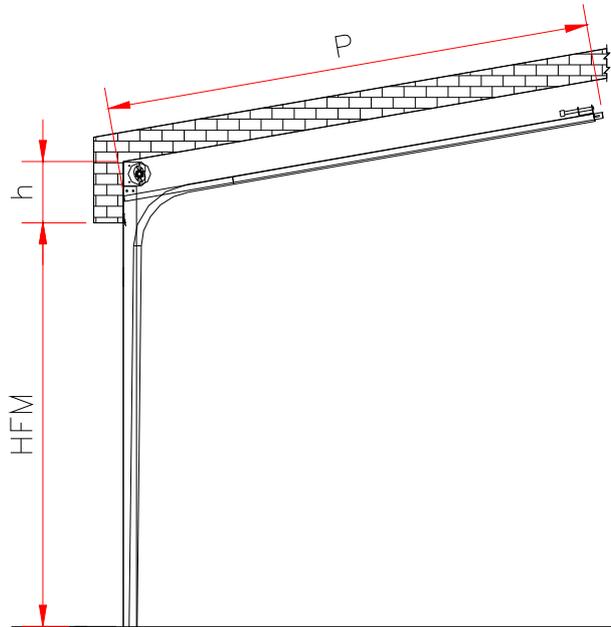
**SA**



SA					
HFM max	5400 mms				
SA max	4080 mms				
HFM	Side room needed				
	STD	Motor	Idler Rollers kit	Winch 1:1	Winch 1:3
≤5400	120	350	250	200	250
P	HFM – SA + 850 mms				

## INCLINED STANDARD SLIDING GUIDES

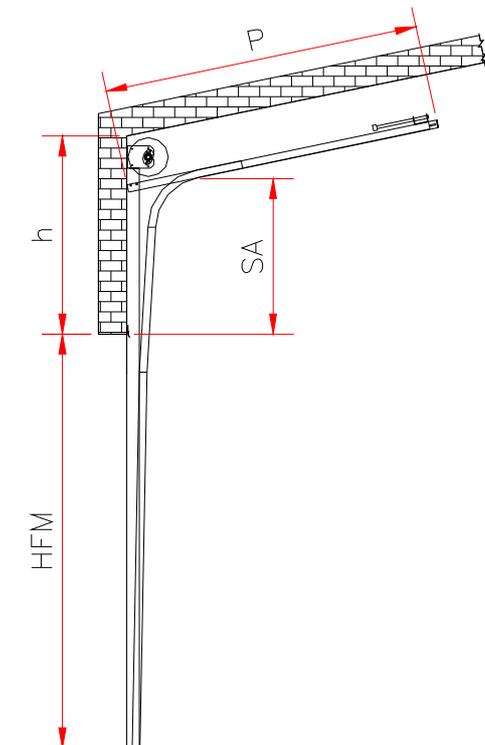
**SNI**



SNI						
HFM max	5400 mms					
HFM	h	Side room needed				
		STD	Motor	Idler Rollers kit	Winch 1:1	Winch 1:3
≤4500	420	120	350	250	200	250
≤5400	510	120	350	250	200	250
P	HFM + 750 mms					

## INCLINED SLIDING GUIDES ON HIGHER LINTEL

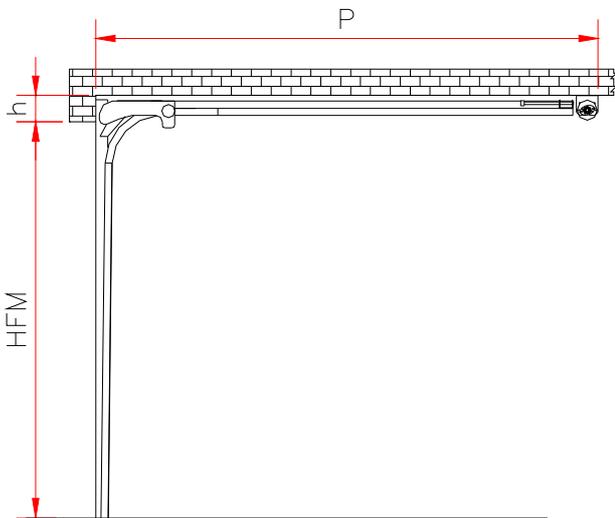
**SAI**



SAI						
HFM max	5400 mms					
SA max	4080 mms					
HFM		Side room needed				
	STD	Motor	Idler Rollers kit	Winch 1:1	Winch 1:3	
≤5400	120	350	250	200	250	
P	HFM – SA + 850 mms					

## SLIDING ON REDUCED LINTEL

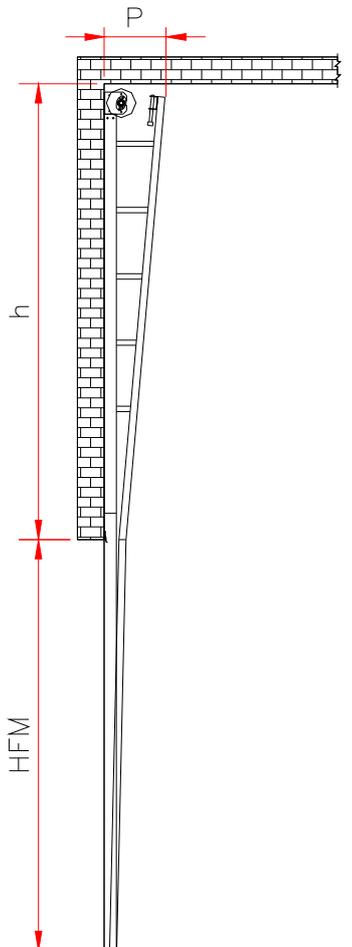
**SR**



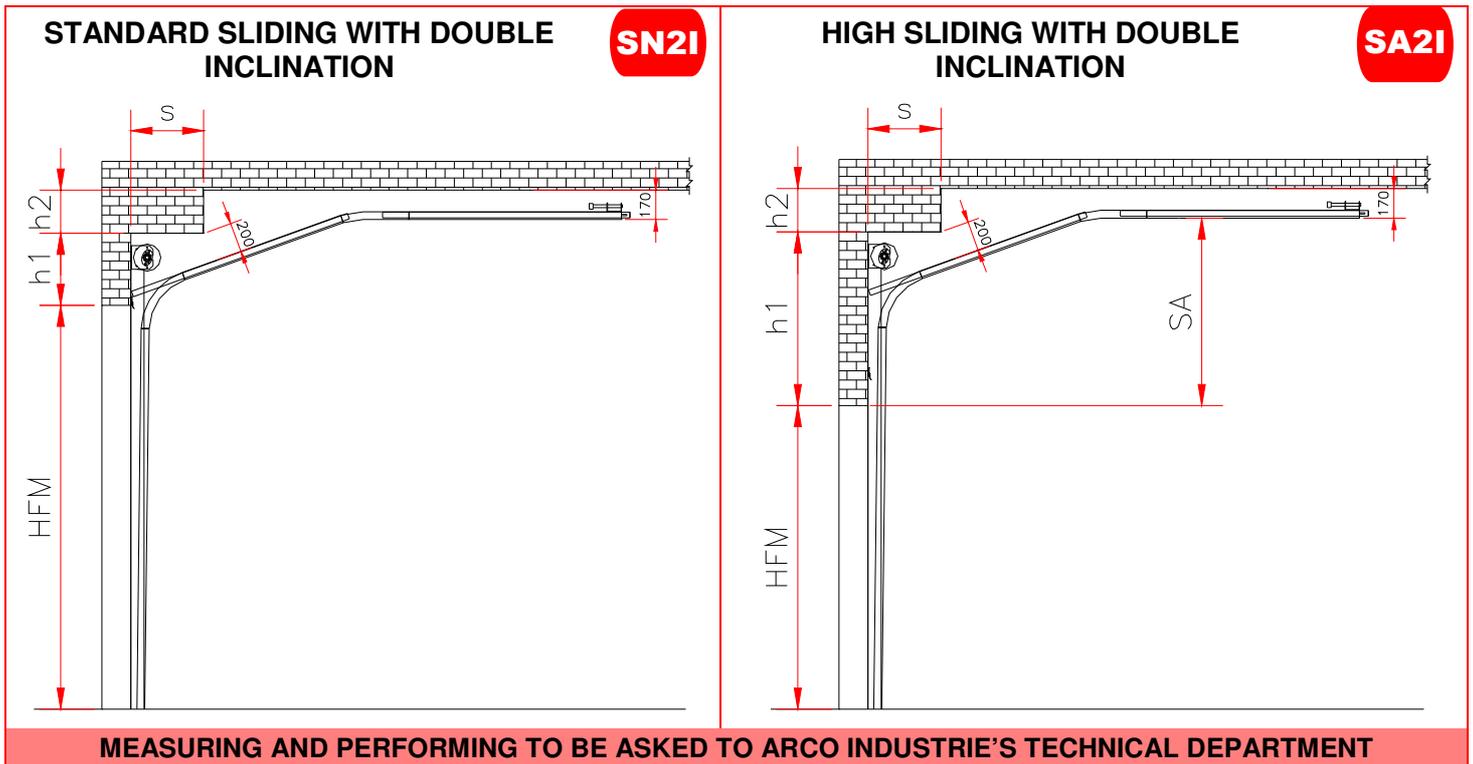
SR				
IP	h	P		
		manual	motorized + idler rollers kit	motorized
40	200	HFM+970	HFM+970	HFM+1100
80	250	HFM+1010	HFM+1010	HFM+1140
Side room needed		150	250	350
Kg max		250		

## TOTALLY VERTICAL SLIDING

**SV**

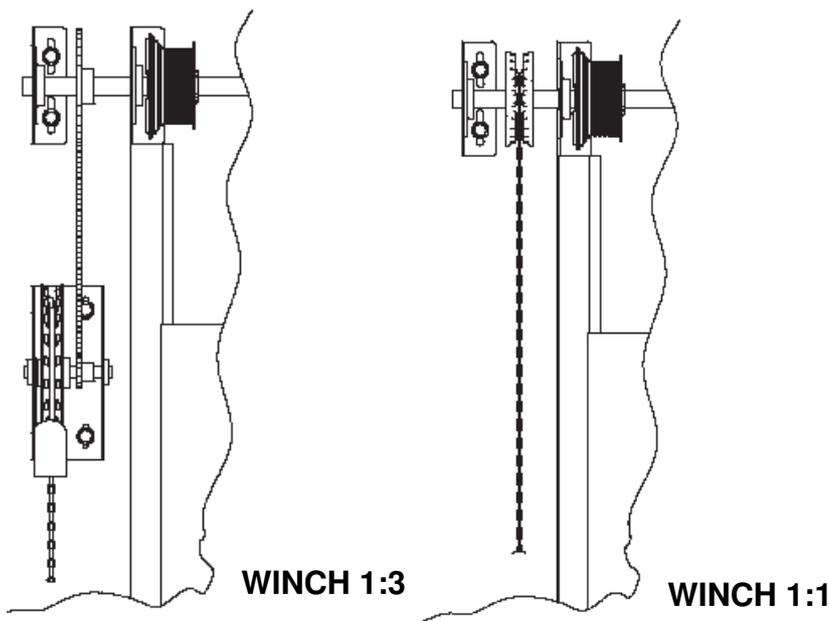


SV	
HFM max	5400 mms
h	min. HFM + 300
P	450 (IP40) / 490 (IP80)
Side room needed	120



## HANDLE AND WINCH

The hosting handle is fixed to the first low panel on the right (outside view), it is built in the door and made of black ABS. The door is mass-produced and it is equipped with a side transfer rope in order to allow the manoeuvring during door closing. To make the manoeuvring of heavy doors easier, the winch is available on demand, and it can have a direct drive or a transmission ratio of 1 to 3.

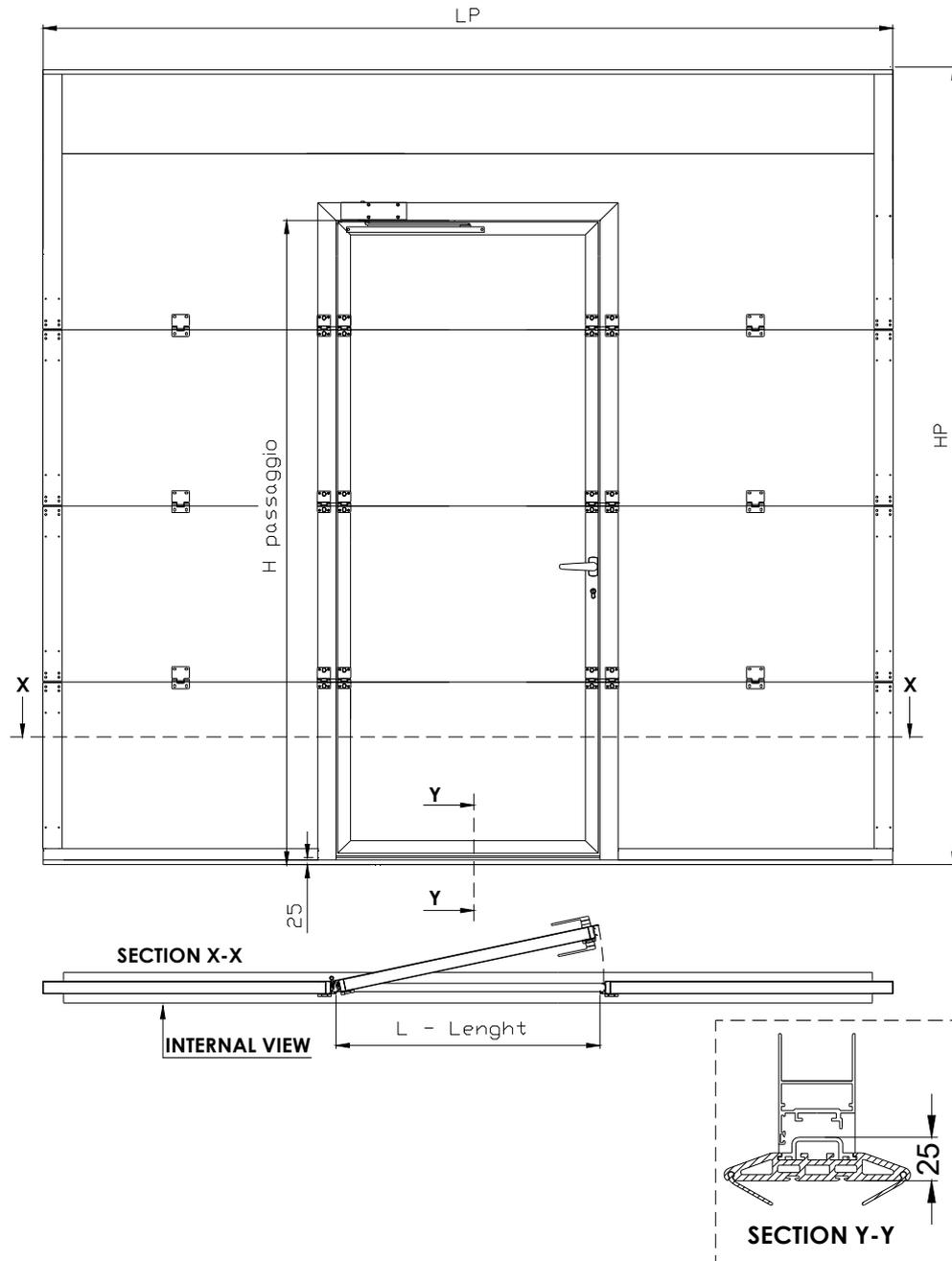


## WICKET DOOR

It is fixed in the sectional door and its frame can be of anodized or painted aluminium; the framing is the same used for the door structure. The opening direction is always from the inside to the outside and has a panic handle; the manoeuvring can either be from inside and outside or only from inside; the locking is through air door closer. Considering the door structure, the wicket door can be positioned both at one side (right or left) and/or in the door centre; the wicket can only be fixed to doors with a LP not over 6000 mms\*.

<b>Dimensions of wicket door in mts</b>		
<b>Lenght - L</b>	<b>Height - H</b>	<b>Skirting board - Z</b>
from 900 to	2120*	25

\*Out-of standard dimensions can be done upon consideration by our technical department (drawing is necessary).

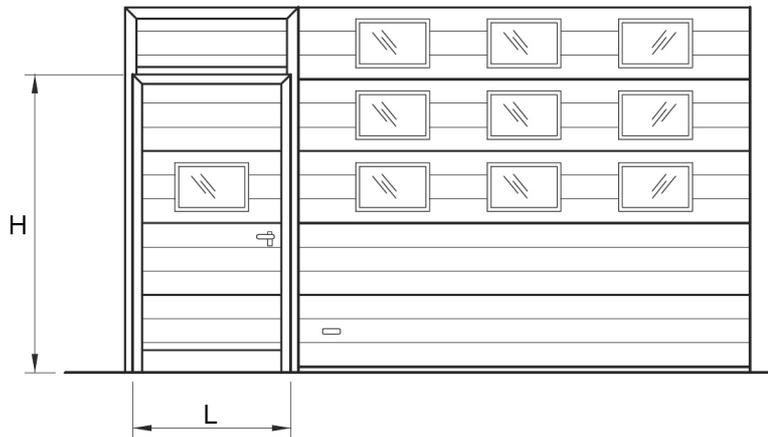


### Warnings:

- 1) If Z=25 the door can be type-tested as emergency exit, otherwise it can only be a pedestrian service passageway;
- 2) The passage height is also determined by the door height.

## SIDE WICKET DOOR

The pedestrian wicket door fixed at one side can be approved as emergency exit: its frame is of natural aluminium (anodized) or painted, and the framing is with the sectional door's panels themselves; it is fitted in the opening to one of the sectional door's rods and it has a standard opening direction towards the outside ( the opening direction can be towards the inside on demand) and it is provided with panic bar or handle, cylinder and lock.



### Outside view

**Length (L)** From 800 to 1200 mms

**Height (H)** Up to 2400 mms

*\*Wicket doors can also be manufactured with  $1200 < "L" < 1300$ : in this case the maximum possible Height is lowered to 2200 mms.*

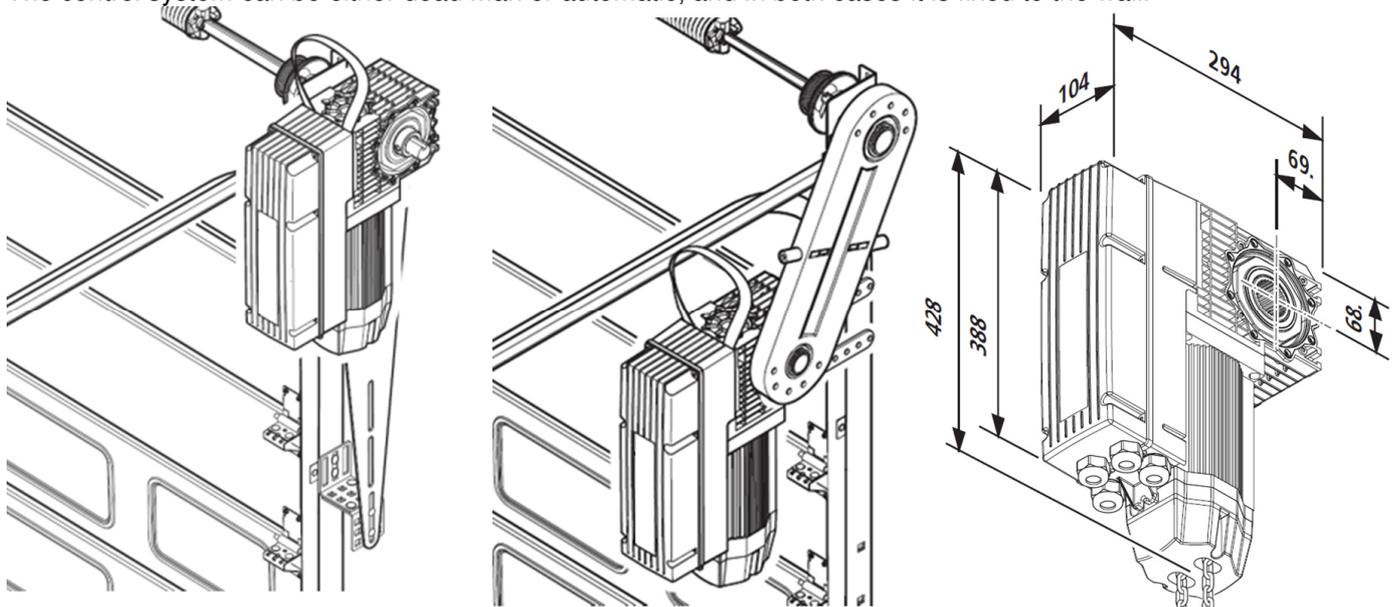
## AUTOMATION

The electromechanical motor reducer can either be three-phase or single-phase and has a monocoque of melted aluminium and bronze gears. It is installed directly to the springs' shaft or it can be transferred through a ring-pinion-chain system. It is easy to adjust through the micrometric limit switches, which are particularly reliable. To power the motor an industrial socket 16A (3 phases + neutral) 5 poles should be predisposed.

Engine technical data		
	single-phase	three-phase
Power supply	230 V (50 Hz)	400 V (50 Hz)
Electrical input	4.6 A	1.7 A
Nominal power	370 W	370 W
Outbound revolutions	19 rpm	16 rpm
Torque	80 Nm	110 Nm
Running time	-20° / +60°C	-20° / +60°C
Weight	14 Kgs	14 Kgs

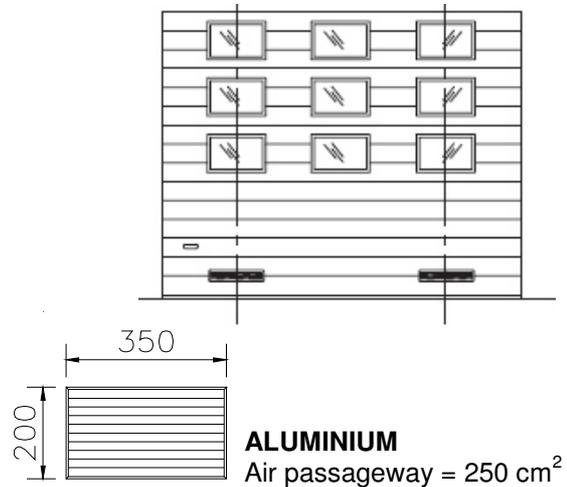
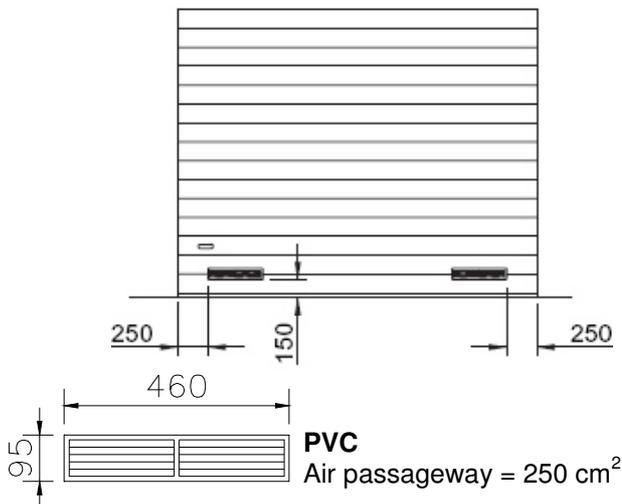
## CONTROL SYSTEM

The control system can be either dead man or automatic, and in both cases it is fixed to the wall.



## GRILLES (ONLY IP 40)

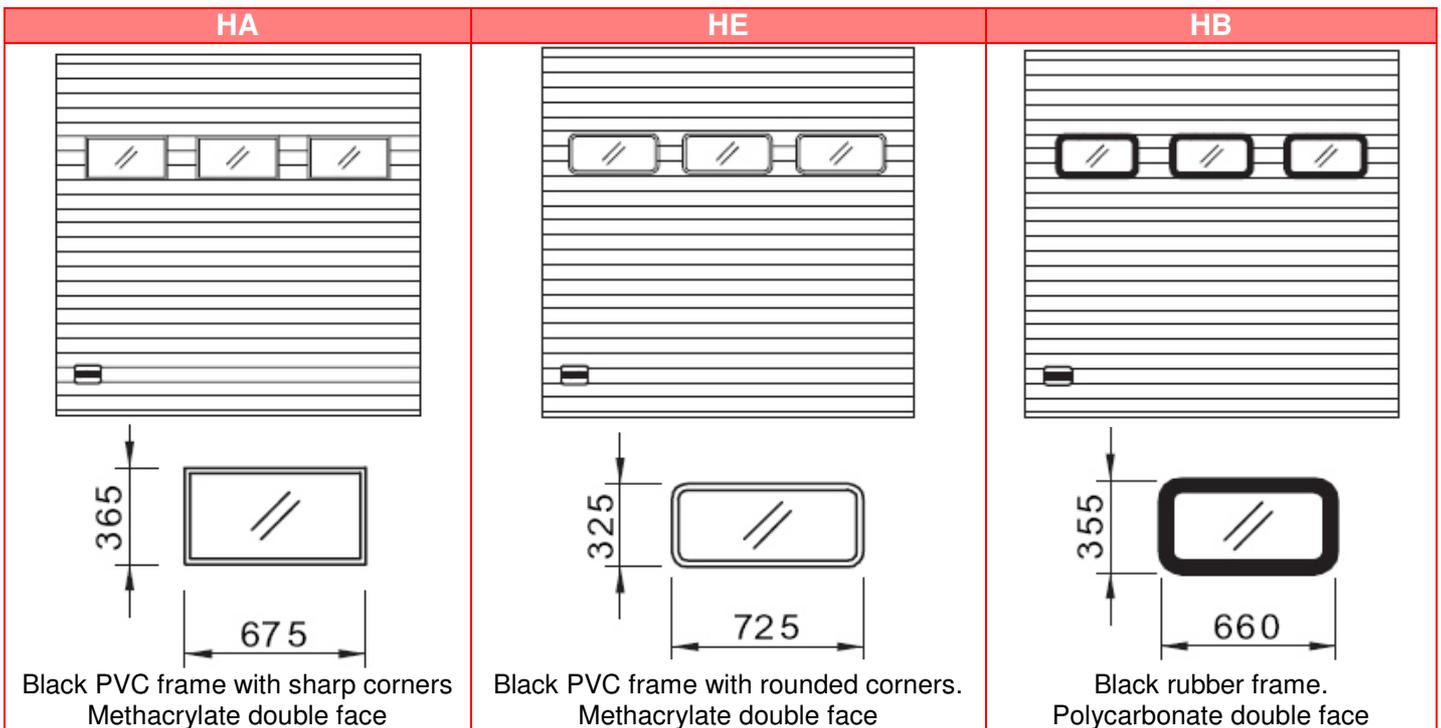
There are two kinds of air grilles available, that is in black PVC and measuring 460X95 mms, or in painted aluminium of the same colour (RAL) of the door and measuring 350X200 mms.



## WINDOWS

Panel IP40: HA, HE, HB.

Panel IP80: HV; dimensions 680x370; aluminium frame; methacrylate double face



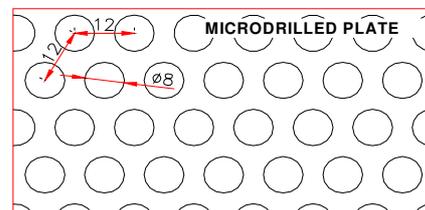
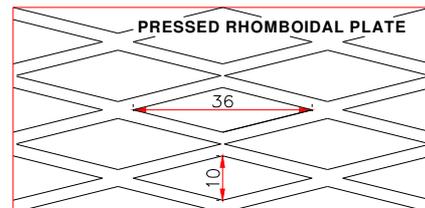
Max. windows per panel	Opening width (LP)
2	From 1900 to 2699 mms
3	From 2700 to 3599 mms
4	From 3600 to 4399 mms
5	From 4400 to 5299 mms
6	From 5300 to 6199 mms
7	From 6200 to 7000 mms

## ALUMINIUM SECTION (ONLY IP 40)

The panels of the **Sunny IP** can be used separately for a IP 40 door: they are made of aluminium and have a window-stopping automatic release and a seal, which are properly outlined for the joint system. They are joined to the steel panels so to get a very solid and bright mixed solution. The panel can be divided into 2, 3, 4, 5 or 6 glasses through middle vertical rods. The standard frame supplied is natural-aluminium coloured, but it can be of the same colour of the door on demand.

Three different kinds of framing can be inserted:

- Single-face methacrylate 5 mms
- Double-glazing methacrylate 16 mms (3+10+3)
- 16mms translucent honeycomb methacrylate
- Microdrilled plate tck. 1 mm – hole Ø8 (35% of airing)
- Pressed rhomboidal plate 43x10 (65% of airing)



Panel width	No° of glasses
From 2000 to 2500 mms	2
From 2501 to 3750 mms	3
From 3751 to 5500 mms	4
From 5501 to 6000 mms	5

