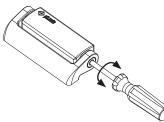
### Description



The HP - HC series hinge switches from Pizzato Elettrica combine safety and style in a single product. The electric switch is fully integrated into the mechanical hinge so that it is virtually invisible to an inexpert eye. This, asides from being an aesthetic advantage, guarantees greater safety as a switch which is difficult to identify is consequently even more difficult to tamper with. The rear mounting without screws in sight and the very precise line mean the switch can be perfectly integrated even with guards of machinery with a very precise design. Complementary hinges with purely mechanical functions are also available to ensure perfect alignment with the rest of the machine.

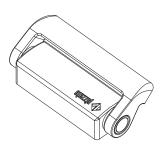
### Adjustment of the switching point



The switching point of the switches can be set with a screwdriver.

Adjusting the switching point allows for any calibration for large size guards. After calibrating the switch, it is always necessary to close the hole using the safety cap supplied.

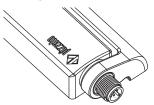
## **Basic activation angle variants**



On request, versions with a switch activation angle of 15° multiples (e.g. 45° or 90°) are available.

The different activation angle does not exclude the possibility of adjustment of the switching point by means of the adjustment screw in the switch. Any change in the operating angle clearly does not alter the maximum mechanical switch travel.

### Integrated M12 connector

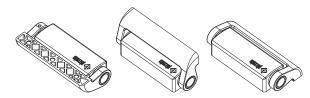


Versions with connection from the top or the bottom are available with integrated M12 connector.

The use of versions with connectors permits faster wiring if guards need to be moved from the test location to the installation site.

### **Opening angle up to 180°**

The mechanical design of the switch also allows use on guards with an opening angle of up to 180°.



### Cable with connector at the back



The version with a rear cable and M12 connector is the best combination between aesthetics and connection ease.

If machines need to assembled at the customer's site, this solution allows the wiring to be hidden. At the same time, it facilitates the connection and disconnection of the wiring from inside the machinery.

# Protection degrees IP67 and IP69K



These devices are designed to be used under the toughest environmental conditions, and they pass the IP67 immersion test acc. to EN 60529. They can therefore be used in all environments where the maximum degree of protection is required for the housing. Due to their special design, these devices are suitable for use in

equipment subjected to cleaning with high pressure hot water jets. These devices meet the IP69K test requirements according to ISO 20653 (water jets with 100 bar and 80°C).

### Versions for glass or polycarbonate doors



A version of the switch developed exclusively for glass and polycarbonate doors without frame is available.

Installation is facilitated by the larger supporting arm and the spaced fixing points; these also prevent the formation of cracks caused by holes located too close to the edge of the guard.

It is necessary to verify that the switch is not used as a mechanical stop for the door.

### Additional hinges



To complete the installation, various types of additional hinges are available to be used in a variable number depending on the weight of the guard.

These hinges have the same aesthetic but cost less as they contain no electrical parts.

## Application examples



- Switch without mounting plate.
- Rear fixing.
- Cable output at the back.



- Switch with angular mounting plate for slotted profile.
- Fixing with internal screws.
- Output with M12 connector at the bottom.



- Switch with straight mounting plate for front slotted profile.
- Fixing with screws at the back.
- Cable output at the bottom.

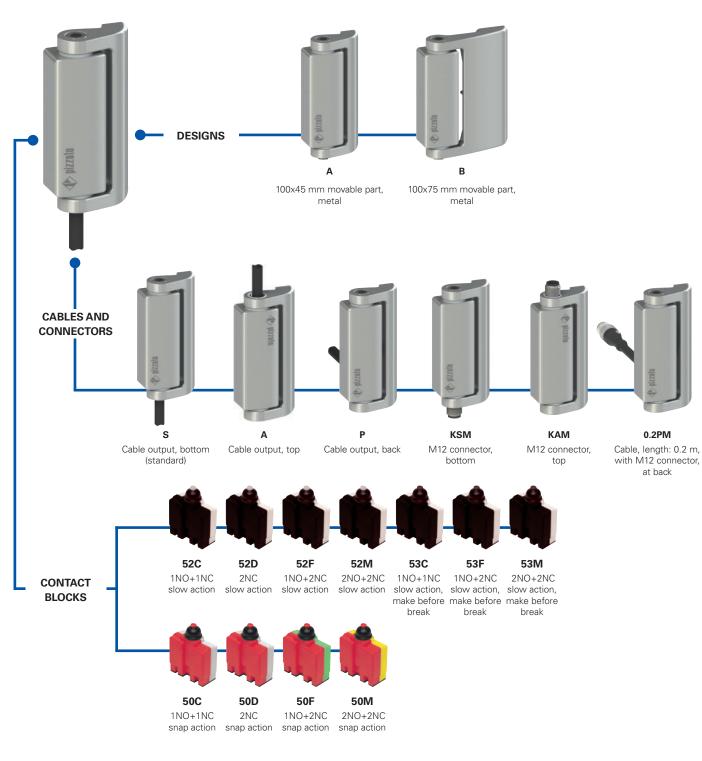
Closed door



- Direct fixing to the polycarbonate plate.
- Switch without mounting plate.
- Fixing with internal screws.
- Output with connector at the back.



Open door



**♦** pizzato

# Selection diagram

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### ADDITIONAL HINGES

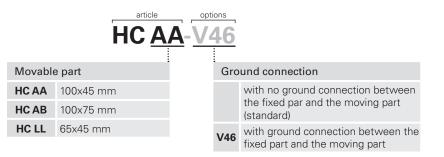


product option

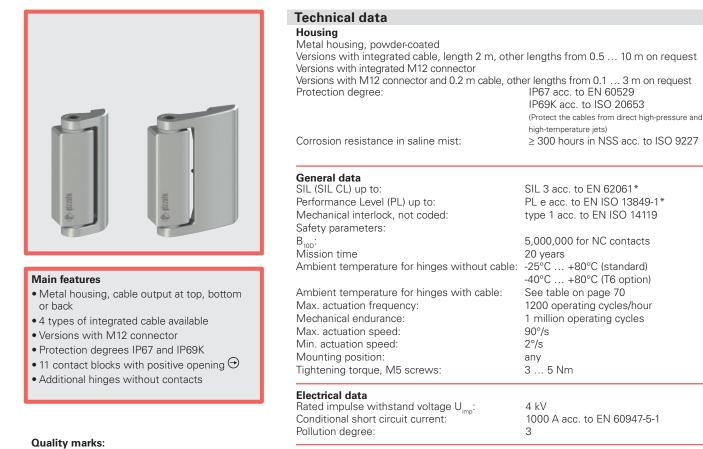
### **Code structure**

Juc	50000		article			ptions		
		HP A <u>A</u> 0	520-25				T6	
Mo	vable par	t ·					: Am	bient temperature
Α	100x45 r	nm movable part, metal						-25°C +80°C
в	100x75 r	nm movable part, metal					Т6	-40°C +80°C
							_	
	Cor	tact block				Activ	ation a	ngle
	52C	1NO+1NC, slow action					0° acti	vation angle (standard)
	52D	2NC, slow action				H15	15° ac	tivation angle
	52F	1NO+2NC, slow action				H30	30° ac	tivation angle
	52M	2NO+2NC, slow action				H45	45° ac	tivation angle
		1NO+1NC, slow action, make before br				H60	60° ac	tivation angle
	53F	1NO+2NC, slow action, make before br	eak			H75	75° ac	tivation angle
		2NO+2NC, slow action, make before br	eak			H90	90° activation angle	
	50C	1NO+1NC, snap action				H105	105° a	ctivation angle
		2NC, snap action				H120	120° activation angle	
	50F	1NO+2NC, snap action				H135	135° a	ctivation angle
		2NO+2NC, snap action				H345	345° a	ctivation angle
	mend	ersions with snap-action contact blocks are red ed for doors having a radius not greater			: Cor	Contact type		
	600 m	ım.			001	silver contacts (standard)		ts (standard)
	Cor	nnection type			<b>G</b> silver contacts with 1 μm gold coating			
	cable, length: 0.2 m with M12 connector		r					to with 1 pin gold oodting
	0.5	(available for 0.2 PM versions only)		Ca	Cable or connector type			
		cable, length: 0.5 m		N	PV	C cable	e, IEC 6	0332-1-2 oil-resistant (standard)
	2	 cable, length: 2 m (standard)		E	PV	C cable	e, IEC 6	0332-1-2 (with 2 contacts only)
				Н	PU	PUR cable, halogen free		en free
		 cable, length: 10 m		R	cable for railway applications (EN 50306-4)		applications (EN 50306-4)	
		integrated M12 connector		М	M1	V12 connector		
	ĸ	Integrated W12 connector		Outer	ut direction connections			
				•	but direction, connections			
				S	1 0 1			
				P				о ,
				A				e right and output at top
				Q	mov	able pa	art at th	e left and output at the back

### Code structure for additional hinges



5



### In compliance with standards:

Approvals:

IEC 60947-5-1, IEC 60947-1, IEC 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN IEC 63000, ISO 20653, UL 508, CSA C22.2 No. 14.

EN 60947-5-1, UL 508, CSA C22.2 No. 14, GB/T14048.5

### Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RoHS Directive 2011/65/ EU.

Features approved by UL

Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1.

⚠ If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given on pages 439 to 454.

⚠ Important: Switch off the circuit voltage before disconnecting the connector from the switch. The connector is not suitable for separation of electrical loads. According to EN 60204-1, versions with 8-pole M12 (2NO+2NC) connector can be used only in SELV circuits.

### Features approved by IMQ

CA02.03746

2021000305000108

RU C-IT.YT03.B.00035/19

E131787

IMQ approval:

CCC approval:

EAC approval:

UL approval:

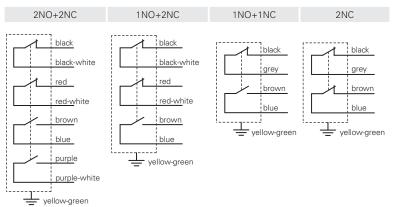
Rated insulation voltage (U <sub>i</sub> ):	250 Vac	Electrical Ratings:	R300 pilot duty (28 VA, 125-250 Vdc)
Conventional free air thermal current (Ith): Protection against short circuits (fuse): Rated impulse withstand voltage (U <sub>imp</sub> )	4~A (4 contacts or 5-pole M12 connector) type gG : $4~kV$	Environmental Ratings:	B300 pilot duty (360 VA, 120-240 Vac) (1-2-3 cont. C300 pilot duty (180 VA, 120-240 Vac) (4 cont.) 24 Vac, Class 2, 2 A pilot duty (M12 connector) 24 Vdc, Class 2, 0.22 A pilot duty (M12 connector) Type 1
Protection degree of the housing:	IP67		
MA terminals (crimped terminals) Pollution degree:	3		
Utilization category:	AC15 / DC13 (with connector)	Please contact our technic	al department for the list of approved products.
Operating voltage (U <sub>e</sub> ):	250 Vac (50 Hz) / 24 Vdc (with connector)		
Operating current (I <sub>e</sub> ):	3 A / 2 A (with connector)		
1	X+X, Y+Y, Y+Y+X, X+X+Y, X+X+Y+Y locks 50A, 50C, 50D, 50F, 50G, 50M, 51A, 2D, 52F, 52G, 52M, 53A, 53C, 53D, 53F,		
In compliance with standards: EN 6094 requirements of the Low Voltage Direct			
Please contact our technical department fo	or the list of approved products		



### Ambient temperatures for hinges with cable and electrical data

	Connection	n type				Output v	with cable				Output with M	V12 connector
	Contact blo	ocks		2 cor	ntacts		3 cor	itacts	4 co	ntacts	2 contacts	3 or 4 contacts
	Cable or co	onnector type	E	Ν	Н	R	Ν	Н	Ν	R	M12 connec- tor, 5-pole	M12 connec- tor, 8-pole
	Conductor	s	5x0.75 mm <sup>2</sup>	5x0.75 mm <sup>2</sup>	5x0.75 mm <sup>2</sup>	5x0.5mm <sup>2</sup>	7x0.5 mm <sup>2</sup>	7x0.5 mm <sup>2</sup>	9x0.34 mm <sup>2</sup>	9x0.5 mm <sup>2</sup>	5x0.25 mm <sup>2</sup>	8x0.25 mm <sup>2</sup>
	Application	n field	General	General	General, mobile installation	Rail	General	General, mobile installation	General	Rail	General	General
	In complia standards	nce with	H05VV-F	05VV5-F	05EQ-H	EN50306-4 1E-300V 5G0,5 mm <sup>2</sup> MM-90 EN 50306-4 EN 45545	03VV-F	03Е7Q-Н	03VV-F	EN50306-4 1P-300V- 9G0.5 mm <sup>2</sup> MM-90 EN 50306-4 EN 45545	03VV-H	03VV-H
s	Sheath		PVC	PVC OIL RESISTANT	PUR HALOGEN FREE	/	PVC OIL RESISTANT	PUR HALOGEN FREE	PVC OIL RESISTANT	/	PVC OIL RESISTANT	PVC OIL RESISTANT
Cable features	Self-exting	uishing	IEC 60332-1-2	IEC 60332-1-2 UL 758:FT1 CEI 20-22 II	IEC 60332-1-2 UL 758:FT1	IEC 60332-1 EN 50305 EN 50306-1	IEC 60332-1-2 UL 758:FT1 CEI 20-22 II	IEC 60332-1-2 UL 758:FT1	IEC 60332-1-2 UL 758:FT1 CEI 20-22 II	IEC 60332-1 EN 50305 EN 50306-1	IEC 60332-1-2 CEI 20-22 II UL 758:FT1	IEC 60332-1-2 CEI 20-22 II UL 758:FT1
Cabl	Oil resistar	nt	/	UL 758 CSA 22.2 N°210	UL 758 CSA 22.2 N°210	/	UL 758 CSA 22.2 N°210	UL 758	UL 758 CSA 22.2 N°210	/	UL 758 CSA 22.2 N°210	UL 758 CSA 22.2 N°210
-	Max. speed	d	/	/	300 m/min	/	/	300 m/min	/	/	50 m/min	50m/min
	Max. accel	eration	/	/	30 m/s <sup>2</sup>	/	/	30 m/s <sup>2</sup>	/	/	5 m/s <sup>2</sup>	5m/s <sup>2</sup>
	Minimum I	bending radius	80 mm	80 mm	80 mm	60 mm	108 mm	80 mm	108 mm	65 mm	75 mm	90 mm
	Outer diam	neter	8 mm	8 mm	8 mm	6 mm	7 mm	7 mm	7 mm	6.5 mm	6 mm	6 mm
	End strippe	ed	80 mm	80 mm	80 mm	80 mm	80 mm	80 mm	80 mm	80 mm	/	/
	Copper cor	nductors IEC 60228	Class 5	Class 5	Class 6	Class 5	Class 5	Class 6	Class 5	Class 5	Class 6	Class 6
	Engraving		Standard	6268	6280	Standard	6274	6282	6278	Standard	6267	6275
ble d	Cable, f	fixed installation	-15°C +60°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C	-25°C +80°C
rith cal	Cable, fle	exible installation	+5°C +60°C	-5°C +80°C	-25°C +80°C	-25°C +80°C	-5°C +80°C	-25°C +80°C	-5°C +80°C	-25°C +80°C	-15°C +80°C	-15°C +80°C
ture w sta	Cable, m	nobile installation	/	/	-25°C +80°C	/	/	-25°C +80°C	/	/	-15°C +80°C	-15°C +80°C
nperat (T6)	Cable, f	fixed installation	/	/	-40°C +80°C	-40°C +80°C	/	-40°C +80°C	/	-40°C +80°C	/	/
Ambient temperature with cable extended (T6) standard	Cable, fle	exible installation	/	/	-40°C +80°C	-40°C +80°C	/	-40°C +80°C	/	-40°C +80°C	/	/
Ambi	Cable, m	nobile installation	/	/	-40°C +80°C	/	/	-40°C +80°C	/	/	/	/
	Thern	nal current Ith	10 A	10 A	10 A	6 A	6A	6 A	ЗA	4 A	4 A	2 A
	Rated ins	ulation voltage Ui	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac 300 Vdc	30 Vac 36 Vdc
Electrical data	Protection a	against short circuits (fuse)	10 A 500 V type gG	10 A 500 V type gG	10 A 500 V type gG	6 A 500 V type gG	6 A 500 V type gG	6 A 500 V type gG	3 A 500 V type gG	4 A 500 V type gG	4 A 500 V type gG	2 A 500V type gG
cal	u >	24 V	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A
ectri	llization tegory DC13	125 V	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	/
Ξ	Utiliza cateo DC	250 V	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	/
	<b>C</b> >	24 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	2 A
	Utilization category AC15	120 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	/
	Utili cate A	250 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	,
	Арр	rovals	4 A CE cULus IMQ EAC CCC	4 A CE cULus IMQ EAC CCC	CE cULus IMQ EAC CCC	CE IMQ EAC CCC	4 A CE cULus IMQ EAC CCC	4 A CE cULus IMQ EAC CCC	CE cULus IMQ EAC CCC	CE IMQ EAC CCC	4 A CE cULus IMQ EAC CCC	CE cULus EAC

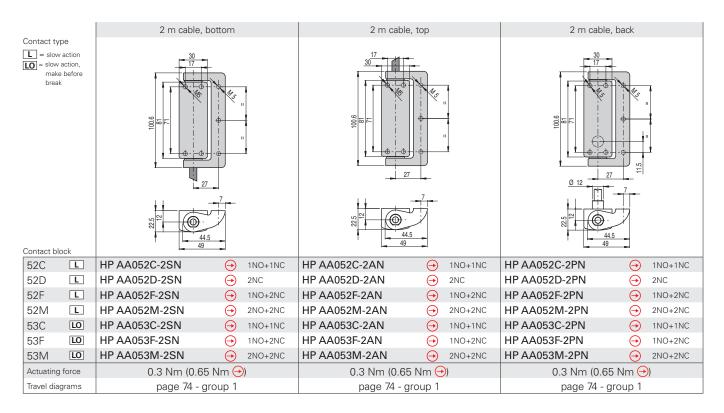
### Internal cable wiring

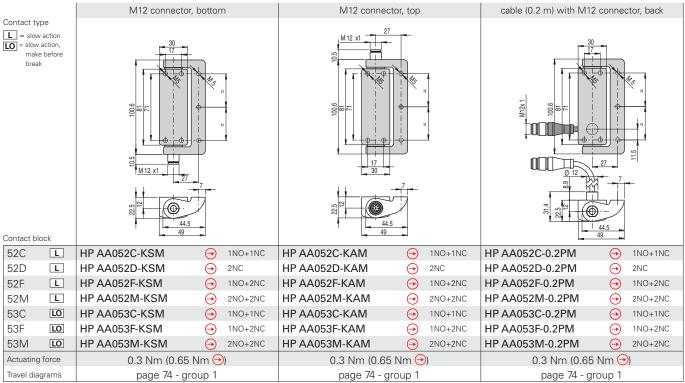


2NO+2NC	1NO+2NC	1NO+1NC	2NC
2 3 4 5 6 1-2 NC 3-4 NC 5-6 NO 7-8 NO	2 3 4 5 6 NC 7 8 NO 1 ↓ 4 8 8 1 1 ↓ 1 1 1 1 1 1 1 1 1 1 1 1 1	2 3 1-2 NC 3-4 NO 5 ↓	$2 \underbrace{\overset{1}{\underset{3}{\underset{5}{\underset{5}{\underset{5}{\underset{5}{\underset{5}{\underset{5}{5$

**Connector pin assignment** 

Female connectors See page 419

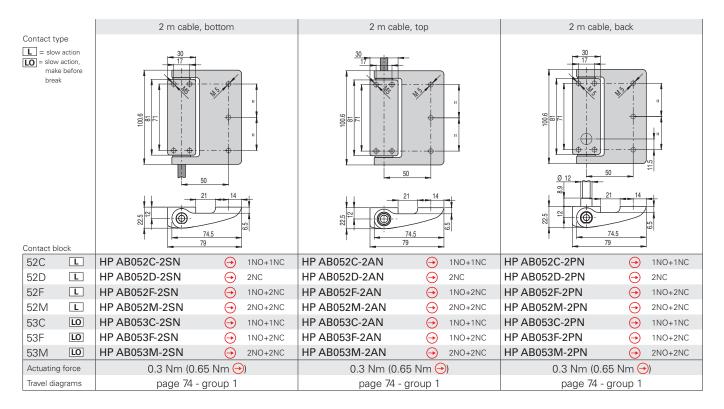


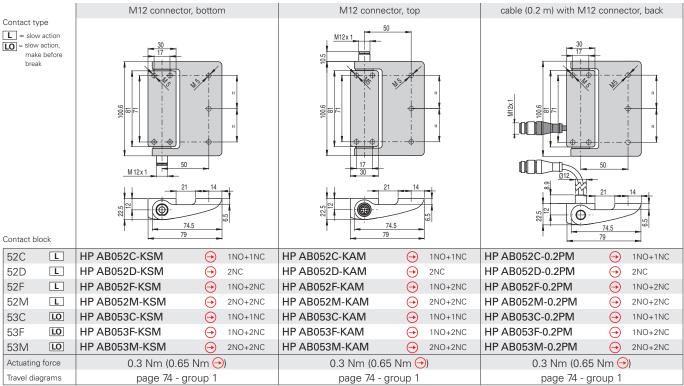


Attention! The safety hinge switch can be combined together exclusively with one or more Pizzato Elettrica hinges (HP or HC series). The use of whichever other hinge does not guarantee the correct operation of the safety device.

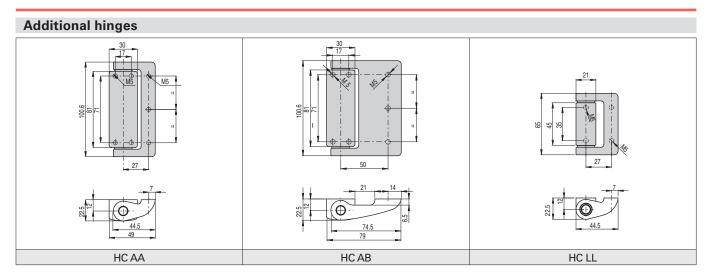
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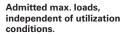




Attention! The safety hinge switch can be combined together exclusively with one or more Pizzato Elettrica hinges (HP or HC series). The use of whichever other hinge does not guarantee the correct operation of the safety device.



### Maximum forces and loads HP AA•••••, HC AA, HC LL



25 Nm

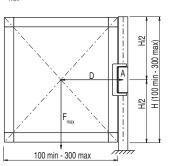
exceed

under anv

max

5

# Doors with one safety hinge $F_{max}(N)=25,000/D \text{ (mm)}$



## Doors with one safety hinge and one additional hinge F....(N)=200,000/D (mm)

150 min - 800 max

H/5

99.

H

H/5

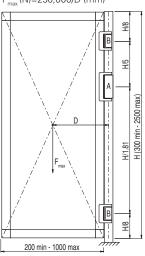
max)

H (200 min - 1600

Δ

В

Doors with one safety hinge and two additional hinges F<sub>max</sub>(N)=250,000/D (mm)



### Legend

Attention

circumstances.

loads

1000 N

max

1500 N 1

max

listed

Never

above

The loads have been verified by a

fatigue test of one million operating cycles with a 90° opening angle.

F Force exerted by the weight of the door (N) D Distance from the centre of gravity of the door to the axis of the hinge (mm) Safety hinge

the

А В Additional hinge

### Maximum forces and loads HP AB ...., HC AB

Admitted max. loads, independent of utilization conditions.



the listed loads above under any circumstances The loads have been verified by a fatigue test of one million operating cycles with a 90° opening angle.

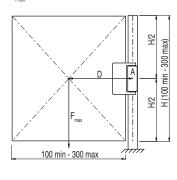
### Legend

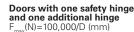
F <sub>max</sub>	Force exerted by the weight of the door (N)
D	Distance from the centre of gravity of the door to the axis of the hinge
(mm)	
А	Safety hinge
В	Additional hinge

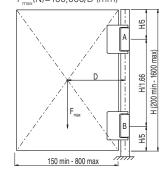
### rressories

Accessories				
Article	Description			
VF AC7032	Protection cap for adjustment screw			
	The cap is supplied with every hinge and mu be inserted after the adjustment of the s point. In case of loss or damage, the cap can be separately.	switching		
All values in the drawings are in mm		Accessorie		

# **Doors with one safety hinge** F<sub>max</sub>(N)=12,500/D (mm)

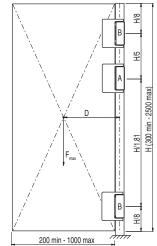






# Doors with one safety hinge and two additional hinges

### <sub>nax</sub> (N)=200,000/D (mm)

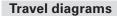


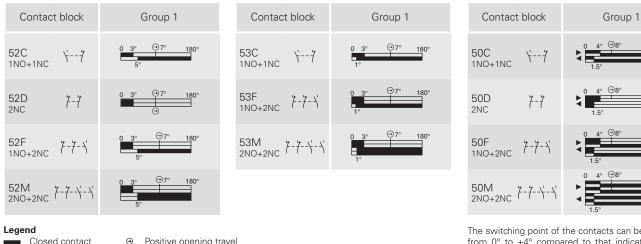
→ The 2D and 3D files are available at www.pizzato.com



180

5





The switching point of the contacts can be adjusted from 0° to +4° compared to that indicated in the travel diagrams. The hinge is supplied without preadjustment.

### **Fixing plates**

Dpen contact

Fastening screws for profile not supplied.

⊙▲▼

Positive opening travel

Switch pressed / Switch released

