

Application field

Pizzato Elettrica widens its own range of products making a new series of safety switches hinge-shaped, where safety and style are melted in one single product.

The switch is completely integrated in the mechanical hinge, to result practically invisible to an inexperienced eye. This guarantees a higher safety because a switch hard to identify is consequently also more difficult to defeat. The assembly without visible screws and the pleasant line, make the switch perfectly integrated also with guards of modern design machinery.

In order to complete the offer complementary hinges with purely mechanics functions are available.



Operating point regulation



The switches operating point can be regulated through a simple Phillips screwdriver. The operating point regulation allows the setting possibility (up to 4°) for large guards. After the setting, it's always necessary to close the hole through the suitable supplied safety seal plug.

Variations of the activation base angle



New versions with the switch activation angle equal to a multiple of 15° (e.g. 45° or 90°) are available on request. The different activation angle does not invalidate the possibility to adjust the operating point through the switch adjusting screws. The variation of the operating angle does not alter the switch maximum mechanical travel.

M12 integrated connector version



Versions with connection from the top or the bottom are available with M12 integrated connector. The application of versions with connector allows a faster wiring when it's necessary to move guards from test line to final user.

Opening angle up to 180°



The mechanical design of the switch allows the application also onto protections up to 180° opening angle.

INNOVATION & DESIGN AWARD 2007



This product has been presented at the "Innovation & Design award 2007" which selects, among all industrial products, those that stand out for technological innovation and their particular design. The switch has been selected by the jury in category "Innovation" during the fair "Enermotive 2007".

Versions for glass or polycarbonate doors



It's available a variation of the switch shape specifically designed for glass and polycarbonate doors without frame. The wider supporting arm and the spaced fixing points facilitate the installation and prevent the cracking caused by holes too near the guard edge.

However, it is necessary to verify that the door mechanical stop is not performed by the switch.

Cable with connector from back



This version with cable and M12 connector from back is the best combination between aesthetics and connection ease. When machineries have to be assembled by the final customer, this solution allows to hide the wiring and at the same time to easily connect or disconnect it from inside the machinery.

Additional hinges



To complete the installation, different additional hinges are available to be used in different combinations based on the guard weight.

These hinges keep the same aesthetics and mechanical structure and without the electrical part their price is lower.



Application examples



- Switch without supports
- Rear fixing
- Cable output from back



- Switch with angular supports for profiles with slots
- Fixing through internal screws
- Connector output from bottom



- Switch with plane supports for profiles with slots
- Fixing through front screws
- Cable output from bottom



- Direct fixing to the polycarbonate plate
- Switch without supports
- Fixing with internal screws
- Output with connector from back

1

1A

1B

2

2A

2B

2C

2D

2E

3

3A

3B

3C

4

4A

4B

4C

4D

4E

4F

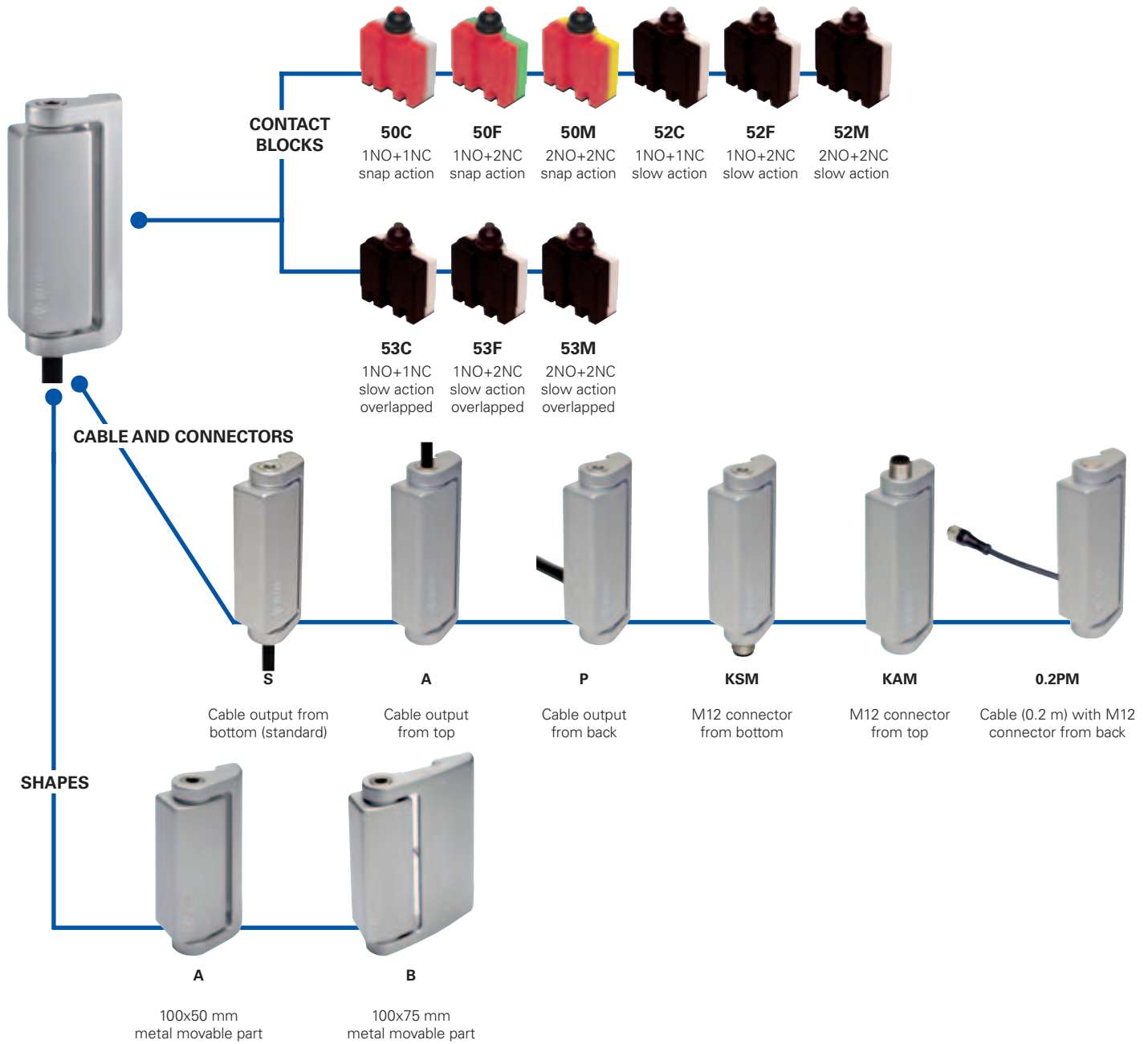
4G

4H

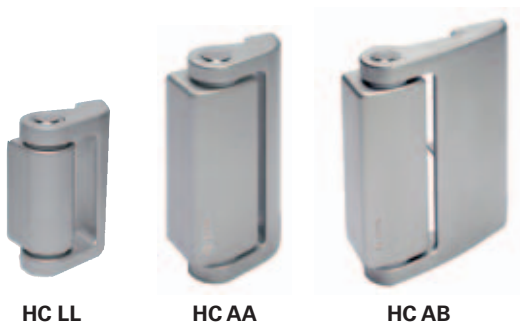
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6

Selection diagram



COMPLEMENTARY HINGES



—●— product option



Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

HP AA050C-2SNGH15

Movable part	
A	100x50 metal movable part
B	100x75 metal movable part

Contact block	
50C	1NO+1NC, snap action
50F	1NO+2NC, snap action
50M	2NO+2NC, snap action
52C	1NO+1NC, slow action
52F	1NO+2NC, slow action
52M	2NO+2NC, slow action
53C	1NO+1NC, slow action overlapped
53F	1NO+2NC, slow action overlapped
53M	2NO+2NC, slow action overlapped

Type of connection	
0.2	cable length 0.2 m
...
2	cable length 2 m (standard)
...
10	cable length 10 m
K	with integrated connector

Movable part rotation	
	0° movable part rotated (standard)
H15	15° movable part rotated
H30	30° movable part rotated
H45	45° movable part rotated
H60	60° movable part rotated
H75	75° movable part rotated
H90	90° movable part rotated

Contacts Type	
	silver contacts (standard)
G	silver contacts gold plated 1 µm

Type of cable or connector	
N	cable EN 50265-1 black (standard)
G	cable CEI 20-22 II grey (contact block with 2 contacts only)
H	cable PUR halogen free grey (contact block with 2 contacts only)
M	M12 connector

Connection output direction	
S	from bottom
P	from back
A	from top

HC AA

Complementary hinges (H x L)	
HC AA	100.6 x 49 mm
HC AB	100.6 x 79 mm
HC LL	65 x 44.5 mm

- 1
- 1A
- 1B
- 2
- 2A
- 2B
- 2C
- 2D
- 2E
- 3
- 3A
- 3B
- 3C
- 4
- 4A
- 4B
- 4C
- 4D
- 4E
- 4F
- 4G
- 4H
- 5
- 6



Main data

- Metal housing, cable output from top, bottom or back
- 4 integrated cable types available
- Versions with M12 connector
- Protection degree IP67 and IP69K
- 9 contact blocks with positive opening ☺
- Complementary hinges without contacts

Markings and quality marks:



Approval IMQ: CA02.03746
Approval UL: E131787

Technical data

Housing

Metal housing, coated with baked epoxy powder
Version with cable integrated with 5 x 0,75 mm², 7 x 0,5 mm² o 9 x 0,34 mm² wires length 2 m, other lengths on request.

Versions with M12 5 or 8 poles integrated connector

Protection degree: IP67 according to EN 60529
IP69K according to DIN 40050

General data

Safety parameters: see page 6/32
Ambient temperature: See table on page 4/32
Max operating frequency: 1200 operations cycles¹/hour
Mechanical endurance: 1 million operations cycles¹
Max actuating speed: 90°/s
Min. actuating speed: 2°/s
Assembling position: any
Max axial charge: 1500 N (preliminary data)
Max radial charge: 1000 N (preliminary data)
M5 screws max driving torque: 3 ... 5 Nm
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 60947-5-1 standard.

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529.

Approvals:

IEC 60947-5-1, UL 508

In conformity with requirements requested by:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.

Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

⚠ **If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 6/1 to page 6/10.**

⚠ **Attention: switch off the circuit voltage before disconnecting the connector from the switch. The connector is not suitable for sectioning of electrical loads. According to EN 60204-1, versions with 8 poles M12 connector can be used only in circuits PELV.**

Data type approved by IMQ

Rated insulation voltage (Ui): 400 Vac / 250 Vac (with connector)
Thermal current (Ith): 10 A (1-2 contacts) / 6 A (3 contacts) / 4 A (4 contacts e with connector)
Protection against short circuits (fuse): 10 A (1-2 contacts) / 6 A (3 contacts) / 4 A (4 contacts e with connector) type gG
Protection degree: IP67
MA terminals (seamed clamps)
Pollution degree: 3
Utilization category: AC15 / DC13 (with connector)
Operation voltage (Ue): 400 Vac (50 Hz) / 24 Vdc (with connector)
Operation current (Ie): 3 A / 2 A (with connector)
Forms of the contact element: X, Y, X+Y, X+X, Y+Y, Y+Y+X, X+X+Y, X+X+Y+Y
Positive opening of contacts on contact block 50A, 50C, 50D, 50F, 50G, 50M, 51A, 51C, 51D, 51F, 51G, 51M, 52A, 52C, 52D, 52F, 52G, 52M, 53A, 53C, 53D, 53F, 53G, 53M

In conformity with standards: EN 60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 2006/95/CE and subsequent modifications and completions.

Please contact our technical service for the list of approved products.

Data type approved by UL

Utilization categories: R300 pilot duty (28 VA, 125-250 Vdc)
B300 pilot duty (360 VA, 120-240 Vac)

Data of the housing type 1, 4X "indoor use only"; 12

In conformity with standard: UL 508

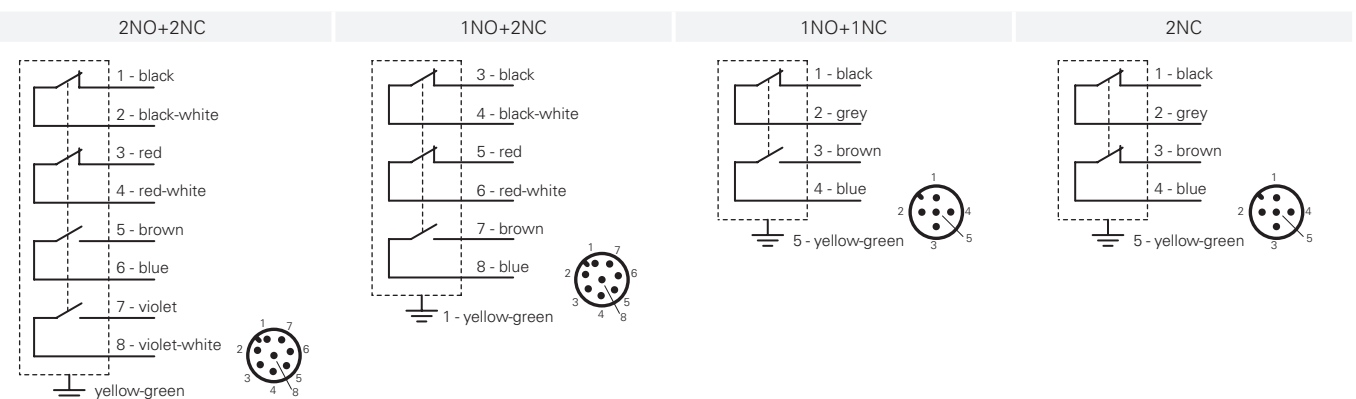
Please contact our technical service for the list of approved products.



Utilization temperatures and electrical data

		output with cable						output with connector			
		2 contacts versions			3 contacts versions		4 contacts versions	2 contacts versions	3 or 4 contacts versions		
		Cable type N 5x0,75 mm ² ,	Cable type G 5x0,75 mm ² ,	Cable type H 5x0,75 mm ² ,	Cable type N 7x0,5 mm ²	Cable type H 7x0,5 mm ² ,	Cable type N 9x0,34 mm ²	5 poles M12 connector	8 poles M12 connector		
		Sheath PVC H05VV-F, Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2	Sheath PVC S05VV-F, Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2 IEC 60332-3 CEI 20-22 II	Max Speed 100 m/min Max Acceleration 2 m/s ² Sheath PUR HALOGEN FREE Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2 IEC 60332-3	Sheath PVC H05VV-F, Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2	Max Speed 300 m/min Max Acceleration 25 m/s ² Sheath PUR HALOGEN FREE Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2 IEC 60332-3	Sheath PVC H05VV-F, Not flame-spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2				
		Min. bend radius: 72 mm	Min. bend radius: 72 mm	Min. bend radius: 70 mm	Min. bend radius: 108 mm	Min. bend radius: 108 mm	Min. bend radius: 94 mm				
		Oil-resistant IEC 60811-2-1		Without halogens IEC 60754-1 Oil-resistant IEC 60811-2-1 Gas emission reduced IEC 61034-1		Without halogens IEC 60754-1 Oil-resistant IEC 60811-2-1 Gas emission reduced IEC 61034-1					
		Copper class 5 IEC 228	Copper class 5 IEC 228	Copper class 6 IEC 228	Copper class 5 IEC 228	Copper class 6 IEC 228	Copper class 5 IEC 228				
Utilization temperatures	Standard temperature	Fixed laying cable	-25°C ... +80°C	-25°C ... +70°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C		
		Flexible laying cable	-25°C ... +80°C	+5°C ... +70°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C	-25°C ... +80°C		
		Dynamic laying cable	/	/	-25°C ... +80°C	/	-25°C ... +80°C	/	/		
Extended temperature -T6		Fixed laying cable	/	/	-40°C ... +80°C	/	-40°C ... +80°C	/	-40°C ... +80°C		
		Flexible laying cable	/	/	-40°C ... +80°C	/	-30°C ... +80°C	/	-40°C ... +80°C		
		Dynamic laying cable	/	/	-40°C ... +80°C	/	-30°C ... +80°C	/	-40°C ... +80°C		
Electrical data		Thermal current I _{th}	10 A	10 A	10 A	6 A	6 A	4 A	4 A	2 A	
		Rated insulation Voltage U _i	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	400 Vac	250 Vac 300 Vdc	30 Vac 36 Vdc	
		Protection 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	4 A 500 V type gG	4 A 500 V type gG	2 A 500V type gG	
		Conditional short circuit current according with EN 60947-5-1	1000 A	1000 A	1000 A	1000 A	1000 A	1000 A	1000 A	1000 A	
		Pollution degree according with EN 60947-5-1	3	3	3	3	3	3	3	3	
		Utilization categories DC13	24 V	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A
			125 V	0,4 A	0,4 A	0,4 A	0,4 A	0,4 A	0,4 A	0,4 A	/
			250 V	0,3 A	0,3 A	0,3 A	0,3 A	0,3 A	0,3 A	0,3 A	/
			Utilization categories AC15	24 V	4 A	4 A	4 A	4 A	4 A	4 A	4 A
		120 V		4 A	4 A	4 A	4 A	4 A	4 A	4 A	/
250 V	4 A	4 A		4 A	4 A	4 A	4 A	4 A	/		
400 V	3 A	3 A		3 A	3 A	3 A	3 A	/	/		
Approvals of switches with integrated cable		CE	CE	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus		

Internal connections

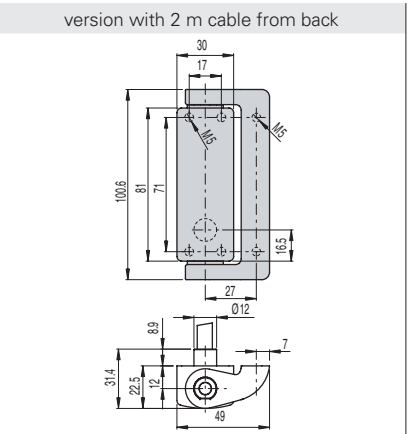
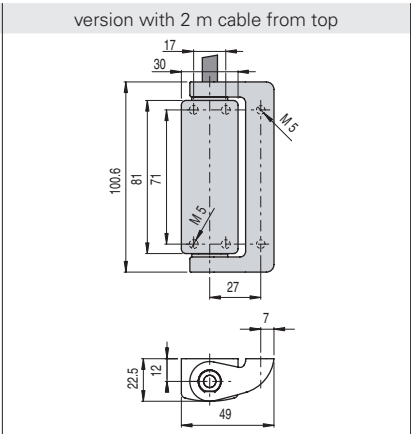
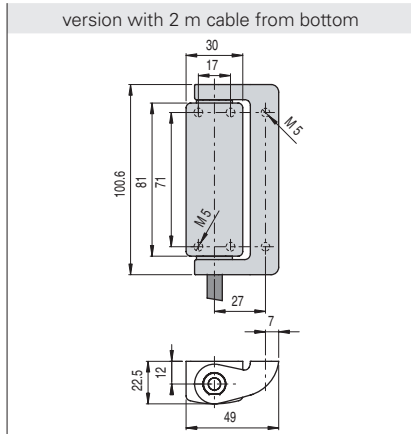


Dimensional drawings

Contacts Type:

- R** = snap action
- L** = slow action
- LO** = slow action overlapped

Contact blocks

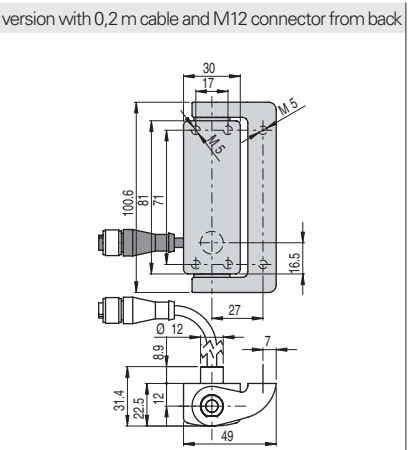
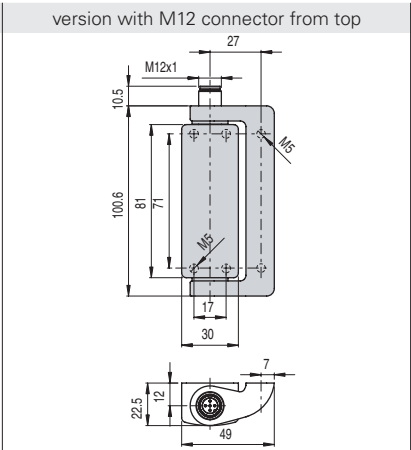
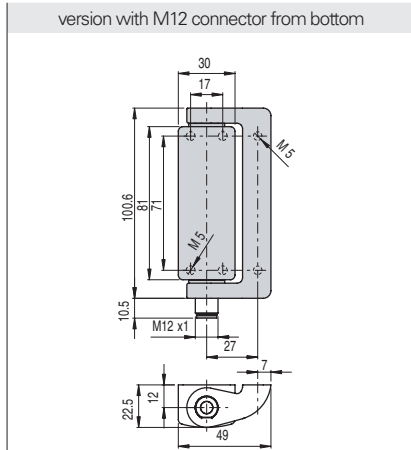


		version with 2 m cable from bottom	version with 2 m cable from top	version with 2 m cable from back
50C	R	HP AA050C-2SN	HP AA050C-2AN	HP AA050C-2PN
50F	R	HP AA050F-2SN	HP AA050F-2AN	HP AA050F-2PN
50M	R	HP AA050M-2SN	HP AA050M-2AN	HP AA050M-2PN
52C	L	HP AA052C-2SN	HP AA052C-2AN	HP AA052C-2PN
52F	L	HP AA052F-2SN	HP AA052F-2AN	HP AA052F-2PN
52M	L	HP AA052M-2SN	HP AA052M-2AN	HP AA052M-2PN
53C	LO	HP AA053C-2SN	HP AA053C-2AN	HP AA053C-2PN
53F	LO	HP AA053F-2SN	HP AA053F-2AN	HP AA053F-2PN
53M	LO	HP AA053M-2SN	HP AA053M-2AN	HP AA053M-2PN
Min. force		0,3 Nm (0,65 Nm)	0,3 Nm (0,65 Nm)	0,3 Nm (0,65 Nm)
Travel diagrams		page 4/34 - group 1	page 4/34 - group 1	page 4/34 - group 1

Contacts Type:

- R** = snap action
- L** = slow action
- LO** = slow action overlapped

Contact blocks



		version with M12 connector from bottom	version with M12 connector from top	version with 0,2 m cable and M12 connector from back
50C	R	HP AA050C-KSM	HP AA050C-KAM	HP AA050C-0.2PM
50F	R	HP AA050F-KSM	HP AA050F-KAM	HP AA050F-0.2PM
50M	R	HP AA050M-KSM	HP AA050M-KAM	HP AA050M-0.2PM
52C	L	HP AA052C-KSM	HP AA052C-KAM	HP AA052C-0.2PM
52F	L	HP AA052F-KSM	HP AA052F-KAM	HP AA052F-0.2PM
52M	L	HP AA052M-KSM	HP AA052M-KAM	HP AA052M-0.2PM
53C	LO	HP AA053C-KSM	HP AA053C-KAM	HP AA053C-0.2PM
53F	LO	HP AA053F-KSM	HP AA053F-KAM	HP AA053F-0.2PM
53M	LO	HP AA053M-KSM	HP AA053M-KAM	HP AA053M-0.2PM
Min. force		0,3 Nm (0,65 Nm)	0,3 Nm (0,65 Nm)	0,3 Nm (0,65 Nm)
Travel diagrams		page 4/34 - group 1	page 4/34 - group 1	page 4/34 - group 1

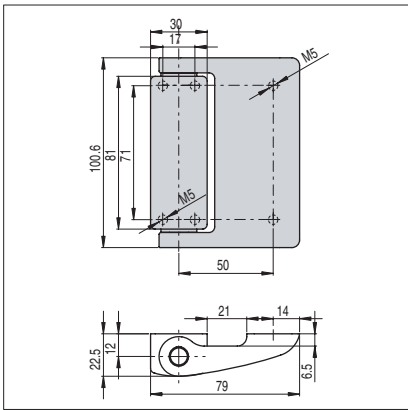
Attention! The safety hinge switch can be combined together exclusively with one or more Pizzato Elettrica hinges (series HP or HC). The use of whichever other hinge does not guarantee the right working of the safety device.

Accessories See page 5/1

All measures in the drawings are in mm



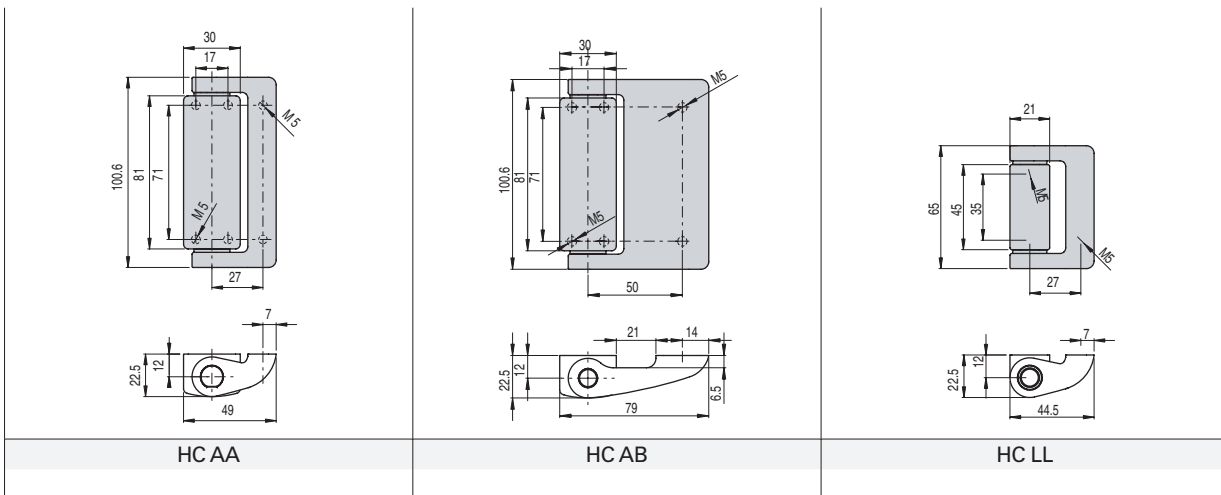
Versions for glass or polycarbonate doors



In order to buy a HP AB series product: substitute codes HP AA with HP AB.

Example:
HP AA050C-2SN → HP AB050C-2SN

Complementary hinges



How to read travel diagrams

All measures in the diagrams are in degrees

Contact blocks	Group 1	Contact blocks	Group 1	Contact blocks	Group 1
50C 1NO+1NC		52C 1NO+1NC		53C 1NO+1NC	
50F 1NO+2NC		52F 1NO+2NC		53F 1NO+2NC	
50M 2NO+2NC		52M 2NO+2NC		53M 2NO+2NC	

The diagrams here illustrated refer to pre-adjusted hinges. Hinges are not supplied pre-adjusted (max. pre-adjustment: 4°).

1
1A
1B
2
2A
2B
2C
2D
2E
3
3A
3B
3C
4
4A
4B
4C
4D
4E
4F
4G
4H
5
6

Accessories

Article	Description
AC 7032	Protection plug of regulation

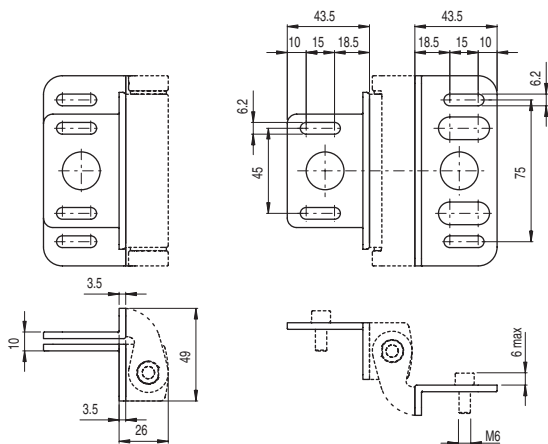
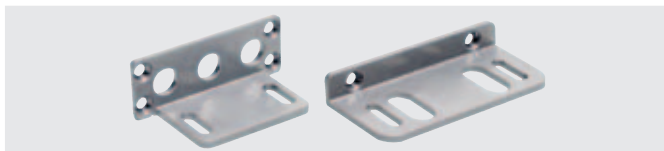


The plug is supplied with every hinge and must always be inserted after the operating point regulation.
In case of loss or damage, the plug can be ordered separately.

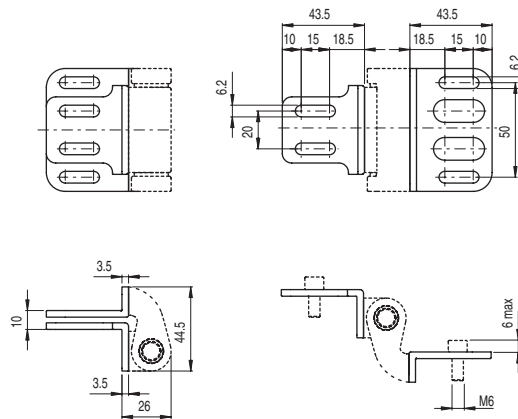
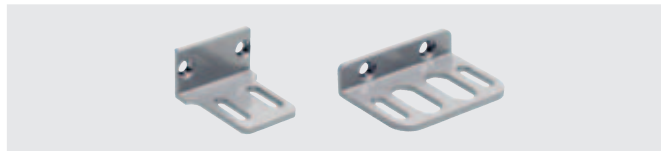
Fixing plates

Fixing screw for profile not supplied on issue

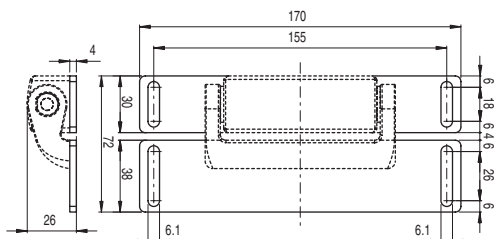
Article	Description
VF SFH1-C	Couple of angular supports for HP AA and HC AA supplied with fixing screws for switch



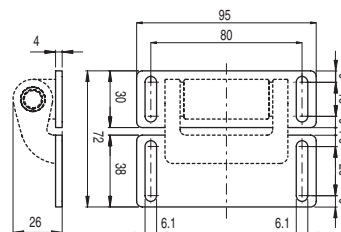
Article	Description
VF SFH2-C	Couple of angular supports for HC LL supplied with fixing screws for switch



Article	Description
VF SFH3-C	Couple of plane supports for HP AA and HC AA supplied with fixing screws for switch



Article	Description
VF SFH4-C	Couple of plane supports for HC LL supplied with fixing screws for switch



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[R2](#) [21EN314-6](#) [221CH54-RB](#) [221CH55-RB](#) [221EN5-R](#) [914CE16-6AN14](#) [924CE19-S3L1](#) [924CE2-T25A](#) [924CE2-Y12](#) [924CE3-S3](#) [SHL-](#)
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