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 inexpert 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.

Protection degree IP67 and IP69K

The HP series switches by Pizzato Elettrica, besides having an IP67

protection degree, have passed the test proving their IP69K protection degree according to the prescriptions established by the DIN 40050 standard. Therefore they are suitable for use in machineries subjected to intense washing with high

pressure and high temperature water jets and for any condition or environment where a particular attention for cleanness and hygiene is required, such as in food or pharmaceutical industry.

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 hinge are available to be used in different combinations based on the guard weight.

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

Application examples



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



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



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



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

Selection diagram CONTACT 52C 52D 52F 52M 53C 53F 53M **BLOCKS** 1NO+1NC 2NC 1NO+2NC 2NO+2NC 1NO+1NC 1NO+2NC 2NO+2NC slow action slow action slow action slow action slow action slow action overlapped overlapped overlapped 50C 50D 50F 50M 1NO+1NC 2NC 1NO+2NC 2NO+2NC snap action snap action snap action snap action **CABLE AND CONNECTORS**

cable output

from back

KSM

M12 connector

from bottom

KAM

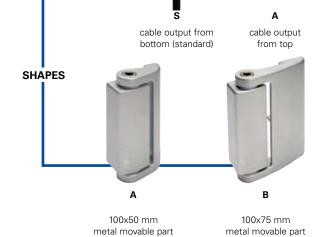
M12 connector

from top

0.2PM

cable (0.2 m) with M12

connector from back



COMPLEMENTARY HINGES



Code structure

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

HP AA052C-2SNGH15

M	ovable part						
Α	100x50 metal movable part						
В	100x75 metal movable part						
Co	ntact block						
520	1NO+1NC, slow action						
521	2NC, slow action						
52	1NO+2NC, slow action						
52	1 2NO+2NC, slow action						
530	1NO+1NC, slow action overlapped						
53	1NO+2NC, slow action overlapped						
53	1 2NO+2NC, slow action overlapped						
500	1NO+1NC, snap action						
501	2NC, snap action						

50M 2NO+2NC, snap action
The versions with snap-action contact blocks are recommended for doors having a radius not greater than 600 mm.

50F 1NO+2NC, snap action

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				

Ac	Activation angle						
	0° activation angle (standard)						
H15	15° activation angle						
H30	30° activation angle						
H45	45° activation angle						
H60	60° activation angle						
H75	75° activation angle						
H90	90° activation angle						
ontacts Type							

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

Type of cable					
N	cable PVC IEC 60332-1 black (standard)				
G	cable CEI 20-22 II grey				
Н	cable PUR halogen free grey				
R	cable for railway sector (EN 50306-4)				
М	M12 connector				

:					
Connection output direction					
S	from bottom				
Р	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				

Safety hinge switches, **HP-HC** series



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

Technical data

Housing

Metal housing, coated with baked epoxy powder

Version with cable integrated 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

(Protect the cables from direct high-pressure and

high-temperature jets)

General data

For safety applications up to SIL 3 / PL e

Safety parameters: see page 7/32 Ambient temperature: See table on page 4/32 Max actuation frequency: 1200 operations cycles¹/hour 1 million operations cycles¹ Mechanical endurance:

Max actuating speed: 90°/s Min. actuating speed: 2°/s Assembling position: any

1500 N (preliminary data) Max axial charge: 1000 N (preliminary data) Max radial charge

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.

Electrical data

Rated impulse withstand voltage U_{imp} :

Conditional shot circuit current: 1000 A according to EN 60947-5-1

Pollution degree:

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, DIN 40050.

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.

Markings and quality marks:







Approval IMO: Approval UL:

CA02 03746 E131787

🛆 If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 7/1 to page 7/10.

🛆 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): 250 Vac

Thermal current (Ith): 10 A (1-2 contacts) / 6 A (3 contacts) / 4 A (4 contacts e with connector) 10 A (1-2 contacts) / 6 A (3 contacts) / Protection against short circuits (fuse): 4 A (4 contacts e with connector) type qG

IP67

Rated impulse withstand voltage (U_{imp}): 4 kV Protection degree:

MA terminals (seamed clamps)

Pollution degree: Utilization category:

Operation voltage (Ue):

Operation current (le):

AC15 / DC13 (with connector) 250 Vac (50 Hz) / 24 Vdc (with connector) 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+ A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/CE.

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

Data of the housing with 2-contact versions with N-type cable

type 1, 4X "indoor use only"

In conformity with standard: UL 508

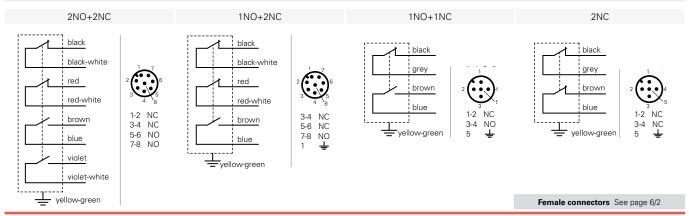
Please contact our technical service for the list of approved products.



Utilization temperatures and electrical data

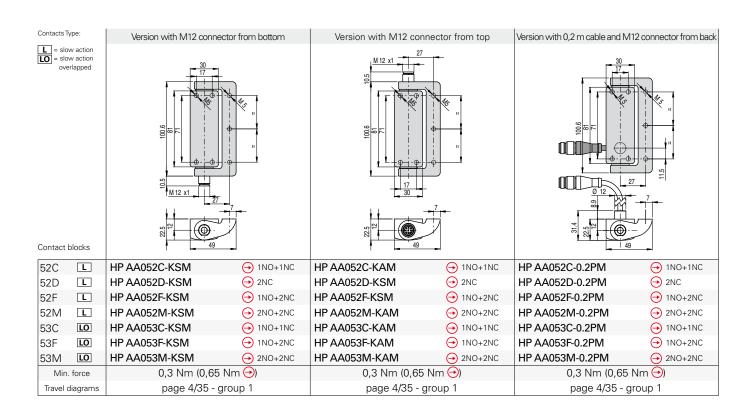
		output with cable					output with connector M12				
			2 cor	ntacts		3 contacts 4 contacts versions versions				2 contacts versions	3 /4 contacts versions
		Cable type N 5x0,75 mm²,	Cable type G 5x0,75 mm ² ,	Cable type H 5x0,75 mm ² ,	Cable type R 5x0,5mm²	Cable type N 7x0,5 mm ²		Cable type N 9x0,34 mm ²	Cable type R 9x0,5mm ²	5 poles M12	8 poles M12
		5.0,75 11111 ,	3.0,73 11111 ,	Max Speed 100 m/min Max Acceleration 2 m/s ²	Cable for railway applications EN50306-4 1E-300V-5x0,5 mm² MM-90	7,0,3 11111	Max Speed 300 m/min Max Acceleration 25 m/s ²	0.0,04 11111	Cable for railway applications EN50306-4 1P-300V-9x0,5 mm² MM-90	connector	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	Sheath PUR HALO- GEN FREE Not flame- spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2 IEC 60332-3	According to: EN 50306-4 EN 45555 Not flame- spreading: IEC 60332-1 EN 50305 EN 50306-1	Sheath PVC H05VV-F, Not flame- spreading IEC 60332-1-2 IEC 60332-1-3 IEC 60332-2-2	Sheath PUR HALO- GEN 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	According to: EN 50306-4 EN 45555 Not flame- spreading: IEC 60332-1 EN 50305 EN 50306-1		
		Min. bend radius: 72 mm	Min. bend radius: 72 mm	Min. bend radius: 70 mm Without halogens IEC 60754-1 Oil-resistant IEC 60811-2-1 Gas emission reduced IEC 61034-1	Min. bend radius: 60 mm Fumes density: EN 50306 IEC 61304-2 EN 50305 TC Halogen content: IEC 60754-1 0% EN 50267 0% Fumes corrosion: EN 50267 pH>4,3 IEC 60754-4/2 pH>4,3		Min. bend radius: 108 mm Without halogens IEC 60754-1 Oil-resistant IEC 60811-2-1 Gas emission reduced IEC 61034-1	Min. bend radius: 94 mm	Min. bend radius: 60 mm Fumes density: EN 50306 IEC 61304-2 EN 50305 TC<5 Halogen content: IEC 60754-1 0% EN 50267 0% Fumes corrosion: EN 50267 PH>4,3 IEC 60754-4/2 PH>4,3		
		Copper class 5 IEC 60228	Copper class 5 IEC 60228	Copper class 6 IEC 60228	Copper class 5 IEC 60228	Copper class 5 IEC 60228	Copper class 6 IEC 60228	Copper class 5 IEC 60228	Copper class 5 IEC 60228		
s p	Fixed laying cable	-25°C +70°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	-25°C +80°C		
rature: tanda:	Flexible laying cable	+5°C +70°C	+5°C +70°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	-25°C +80°C	
mpe	Dynamic laying cable	/	/	-25°C +80°C	/	/	-25°C +80°C	/	/		
Utilization temperatures ended -T6 Standard	Fixed laying cable	/	/	-40°C +80°C	-40°C +80°C	/	-40°C +80°C	/	-40°C +80°C		
Utilization Extended -T6	Flexible laying cable	/	/	-40°C +80°C	-40°C +80°C	/	-30°C +80°C	/	-40°C +80°C	-40°C	+80°C
Exte	Dynamic laying cable	/	/	-40°C +80°C	/	/	-30°C +80°C	/	/		
	Thermal current Ith	10 A	10 A	10 A	6 A	6 A	6 A	4 A	4 A	4 A	2 A
	Rated insulation 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
data	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	6 A 500 V type gG	4 A 500 V type gG	4 A 500 V type gG	4 A 500 V type gG	2 A 500V type gG
	⊆ S 24 V	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A
Electrical	Octifization Categories DC13 DC13 DC13 250 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	/
Ē	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	/
	⊆ ∞ 24 V	4 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A	2 A
	Categories AC15 AC15 AC15 AC15 AC15 AC15 AC15 AC15	4 A	4 A	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	4 A	4 A	1
	rovals of switches integrated cable	CE cULus IMQ	CE	CE cULus IMQ	CE IMQ	CE cULus IMQ	CE cULus IMQ	CE cULus IMQ	CE IMQ	CE cULus IMQ	CE cULus

Internal connections



Safety hinge switches, HP-HC series

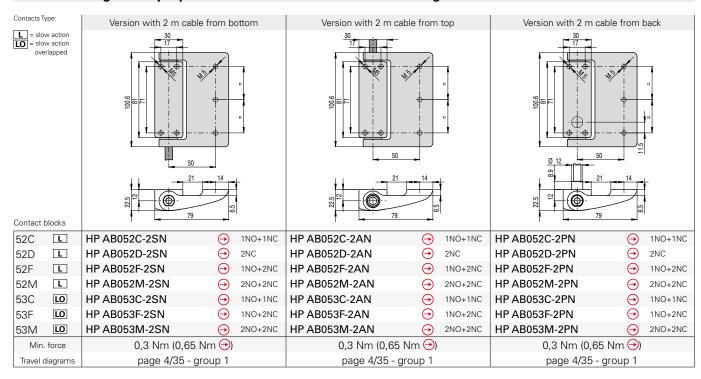
Dimensional drawings Version with 2 m cable from bottom Version with 2 m cable from back Version with 2 m cable from top = slow action = slow action overlapped Contact blocks HP AA052C-2SN HP AA052C-2AN 1NO+1NC 52C L 1NO+1NC 1NO+1NC HP AA052C-2PN \odot \odot 52D L HP AA052D-2SN 2NC HP AA052D-2AN 2NC HP AA052D-2PN (\rightarrow) 2NC \odot \odot \odot 52F HP AA052F-2SN HP AA052F-2AN HP AA052F-2PN 1NO+2NC L 1NO+2NC 1NO+2NC 52M L HP AA052M-2SN \odot 2NO+2NC HP AA052M-2AN \odot 2NO+2NC HP AA052M-2PN \odot 2NO+2NC 53C LO HP AA053C-2SN (\rightarrow) 1NO+1NC HP AA053C-2AN \odot 1NO+1NC HP AA053C-2PN (\rightarrow) 1NO+1NC 53F LO HP AA053F-2SN (\rightarrow) 1NO+2NC HP AA053F-2AN \odot 1NO+2NC HP AA053F-2PN Θ 1NO+2NC \bigcirc 53M LO HP AA053M-2SN 2NO+2NC HP AA053M-2AN 2NO+2NC HP AA053M-2PN 2NO+2NC Min. force 0,3 Nm (0,65 Nm \odot) 0,3 Nm (0,65 Nm →) 0,3 Nm (0,65 Nm \odot) page 4/35 - group 1 page 4/35 - group 1 page 4/35 - group 1 Travel diagrams

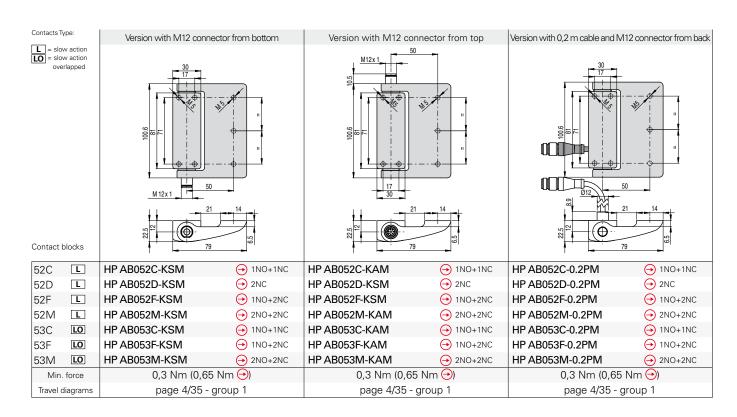


Attention! The safety hinge switch can be combined together exclusively with one or more Pizzato Elettrica hinges (series HP or HC). The use of whichever other hinge does not guarantee the right working of the safety device.

Accessories See page 6/1

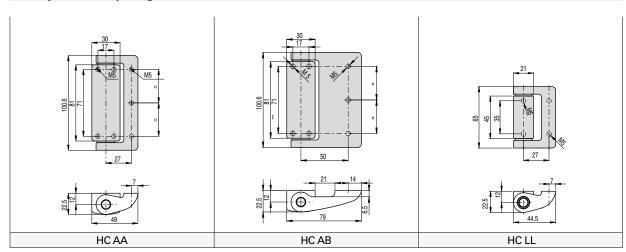
Versions for glass or polycarbonate doors - Dimensional drawings





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.

Complementary hinges



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



Accessories

Article AC 7032 Description
Protection plug of regulation

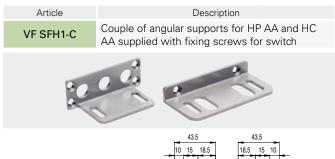


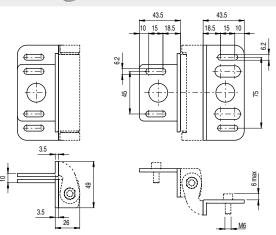
The plug is supplied with every hinge and must always be inserted after the operating point regulation.

In case of loss or damage, the plug can be ordered separately.

Fixing plates

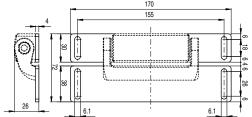
Fixing screw for profile not supplied on issue.

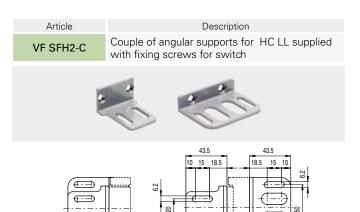


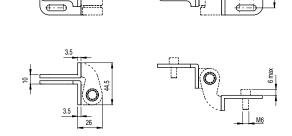


Article	Description
VF SFH3-C	Couple of plane supports for HP AA and HC AA supplied with fixing screws for switch

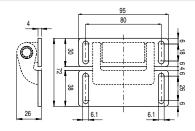








Article	Description				
VF SFH4-C Couple of plane supports for HC LL supplied with fixing screws for switch					



Accessories See page 6/1

Items with code on the **green** background are available in stock