## 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 $4^{\circ}$ ) for large guards. After the setting, it's always necessary to close the hole through the suitable supplied safety seal plug.

## 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.

## 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.

## Variations of the activation base angle



New versions with the switch activation angle equal to a multiple of $15^{\circ}$ (e.g. $45^{\circ}$ or $90^{\circ}$ ) 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.

Opening angle up to $180^{\circ}$


The mechanical design of the switch allows the application also onto protections up to $180^{\circ}$ opening angle.

## 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 the 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 plate
- Switch without supports
- Fixing with internal screws
- Output with connector from back


## Selection diagram



## COMPLEMENTARY HINGES



HC LL


HC AA


HC AB

## Code structure

## HP AA052C-2SNGH15

## Movable part

A $100 \times 50$ metal movable part
B $100 \times 75$ metal movable part

## Contact block

52C $1 \mathrm{NO}+1 \mathrm{NC}$, slow action
52D 2NC, slow action
52F $1 \mathrm{NO}+2 \mathrm{NC}$, slow action
52M $2 \mathrm{NO}+2 \mathrm{NC}$, slow action
53C $1 \mathrm{NO}+1 \mathrm{NC}$, slow action overlapped
$53 F 1 \mathrm{NO}+2 \mathrm{NC}$, slow action overlapped
53M $2 \mathrm{NO}+2 \mathrm{NC}$, slow action overlapped
50C $1 \mathrm{NO}+1 \mathrm{NC}$, snap action
50D 2NC, snap action
50F $1 \mathrm{NO}+2 \mathrm{NC}$, 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 .

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

Activation angle
$0^{\circ}$ activation angle (standard)
H15 $15^{\circ}$ activation angle
H30 $30^{\circ}$ activation angle
H45 $45^{\circ}$ activation angle
H60 $60^{\circ}$ activation angle
H75 $75^{\circ}$ activation angle
H90 $90^{\circ}$ activation angle

## Contacts Type

silver contacts (standard)
G silver contacts gold plated $1 \mu \mathrm{~m}$

## Type of cable

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

## Connection output direction

S from bottom
P from back
A from top

Complementary hinges ( $\mathrm{H} \times \mathrm{L}$ )
HC AA $100.6 \times 49 \mathrm{~mm}$
HC AB $\quad 100.6 \times 79 \mathrm{~mm}$
HC LL $65 \times 44.5 \mathrm{~mm}$


## 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 $\Theta$
- 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 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:
Ambient temperature:
Max actuation frequency:
Mechanical endurance:
Max actuating speed:
Min. actuating speed:
Assembling position:
Max axial charge:
Max radial charge:
M5 screws max driving torque:
(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 60947
(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 $\mathrm{U}_{\mathrm{imp}}: 4 \mathrm{kV}$
Conditional shot circuit current: imp 1000 A according to EN 60947-5-1
Pollution degree:
3

## 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.

## $\measuredangle$ If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page $\mathbf{7 / 1}$ to page $\mathbf{7 / 1 0}$.

$\widehat{\}$ 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 IMO

Rated insulation voltage (Ui): 250 Vac
Thermal current (lth):
Protection against short circuits (fuse):
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) / 4 A (4 contacts e with connector) type gG
Rated impulse withstand voltage ( $\mathrm{U}_{\mathrm{imp}}$ ): 4 kV
Protection degree: IP67 MA terminals (seamed clamps) Pollution degree: Utilization category: Operation voltage (Ue): Operation current (le): 3
AC15 / DC13 (with connector)
Operation current (le): $\quad 3 \mathrm{~A} / 2 \mathrm{~A}$ (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 $50 \mathrm{~F}, 50 \mathrm{G}, 50 \mathrm{M}, 51 \mathrm{~A}$,
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.

[^0]
## Data type approved by UL

Utilization categories: R300 pilot duty ( $28 \mathrm{VA}, 125-250 \mathrm{Vdc}$ )
B300 pilot duty ( $360 \mathrm{VA}, 120-240 \mathrm{Vac}$ )
Data of the housing type $1,4 \mathrm{X}$ "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



## Dimensional drawings



| Contacts Type:$\begin{aligned} \hline \mathbf{L} & =\text { slow action } \\ \hline \mathbf{L O} & =\text { slow action } \\ & \text { overlapped } \end{aligned}$ | Version with M12 | from bottom | Version with M1 | or from top | Version with $0,2 \mathrm{~m}$ cable and M 12 connector from back |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
| 52 C - | HP AA052C-KSM | $\Theta 1 \mathrm{NO}+1 \mathrm{NC}$ | HP AA052C-KAM | $\Theta 1 \mathrm{NO}+1 \mathrm{NC}$ |  |  |
| 52D L | HP AA052D-KSM | $\Theta 2 N C$ | HP AA052D-KSM | $\Theta 2 \mathrm{NC}$ |  |  |
| 52 F L | HP AA052F-KSM | $\Theta 1 \mathrm{NO}+2 \mathrm{NC}$ | HP AA052F-KSM | $\Theta 1 \mathrm{NO}+2 \mathrm{NC}$ |  |  |
| 52 M L | HP AA052M-KSM | $\Theta 2 \mathrm{NO}+2 \mathrm{NC}$ | HP AA052M-KAM | $\Theta 2 \mathrm{NO}+2 \mathrm{NC}$ |  |  |
| 53C L0 | HP AA053C-KSM | $\Theta 1 N O+1 N C$ | HP AA053C-KAM | $\Theta 1 N O+1 N C$ |  |  |
| 53 F L0 | HP AA053F-KSM | $\Theta 1 \mathrm{NO}+2 \mathrm{NC}$ | HP AA053F-KAM | $\Theta 1 \mathrm{NO}+2 \mathrm{NC}$ |  |  |
| 53 M LO | HP AA053M-KSM | $\Theta 2 \mathrm{NO}+2 \mathrm{NC}$ | HP AA053M-KAM | $\Theta 2 \mathrm{NO}+2 \mathrm{NC}$ |  |  |
| Min. force | 0,3 Nm (0,65 Nm $\Theta$ ) |  | 0,3 Nm (0,65 Nm $\Theta$ ) |  |  |  |
| Travel diagrams | page 4/35-group 1 |  | page 4/35-group 1 |  |  |  |

[^1]
## Accessories See page 6/1

## Versions for glass or polycarbonate doors - Dimensional drawings



| Contacts Type: | Version with M12 connector from bottom | Version with M12 connector from top | Version with 0,2 m cable and M12 connector from back |
| :---: | :---: | :---: | :---: |
| $\begin{array}{\|c\|c} \hline \mathbf{L} & =\text { slow action } \\ \mathbf{L O} & =\text { slow action } \\ & \text { overlapped } \end{array}$ <br> Contact blocks |  |  |  |
| 52 C L | HP AB052C-KSM $\quad \rightarrow$ 1NO+1NC | HP AB052C-KAM $\quad \rightarrow$ 1NO+1NC | HP AB052C-0.2PM $\quad \rightarrow$ 1NO+1NC |
| 52D L | HP AB052D-KSM $\quad \Theta$ 2NC | HP AB052D-KSM $\Theta$ 2NC | HP AB052D-0.2PM $\quad \Theta$ 2NC |
| 52 F L | HP AB052F-KSM $\quad$ 1 1NO+2NC | HP AB052F-KSM $\quad$ 1NO+2NC | HP AB052F-0.2PM $\quad$ 1NO+2NC |
| 52 M - | HP AB052M-KSM $\quad \Theta$ 2NO+2NC | HP AB052M-KAM $\quad \Theta$ 2NO+2NC | HP AB052M-0.2PM $\quad \Theta$ 2NO+2NC |
| 53C L0 | HP AB053C-KSM $\quad$ ¢ 1NO+1NC | HP AB053C-KAM $\quad \rightarrow$ 1NO+1NC | HP AB053C-0.2PM $\quad$ 1NO+1NC |
| 53 F L0 | HP AB053F-KSM $\quad \Theta 1 \mathrm{NO}+2 \mathrm{NC}$ | HP AB053F-KAM $\quad \Theta 1 \mathrm{NO}+2 \mathrm{NC}$ | HP AB053F-0.2PM $\quad \Theta 1 \mathrm{NO}+2 \mathrm{NC}$ |
| 53M L0 | HP AB053M-KSM $\quad \Theta$ 2NO+2NC | HP AB053M-KAM $\quad \Theta$ 2NO+2NC | HP AB053M-0.2PM $\quad \Theta$ 2NO+2NC |
| Min. force | 0,3 Nm (0,65 Nm $\Theta$ ) | 0,3 Nm (0,65 Nm $\Theta$ ) | 0,3 Nm (0,65 Nm $\Theta$ ) |
| Travel diagrams | page 4/35-group 1 | page 4/35-group 1 | page 4/35-group 1 |

[^2] hinge does not guarantee the right working of the safety device.

## Complementary hinges



Travel diagrams
All measures in the diagrams are in degrees

| Contact blocks | Group 1 | Contact blocks | Group 1 |
| :---: | :---: | :---: | :---: |
| $\begin{array}{ll} 52 \mathrm{C} & \dot{\prime}--7 \\ 1 \mathrm{NO}+1 \mathrm{NC} & \end{array}$ |  |  |  |
| $\begin{array}{ll} \text { 52D } \\ \text { 2NC } \end{array}$ |  | $\begin{array}{ll} 53 \mathrm{C} & \dot{\prime}--4 \\ 1 \mathrm{NO}+1 \mathrm{NC} & -7 \end{array}$ |  |
| $\begin{array}{ll} 52 \mathrm{~F} \\ 1 \mathrm{NO}+2 \mathrm{NC} \end{array} \quad \neq-7-f^{\prime}$ |  | $\begin{aligned} & 53 \mathrm{~F} \\ & 1 \mathrm{NO}+2 \mathrm{NC} \quad \mid-7-\lambda^{\prime} \end{aligned}$ |  |



The diagrams here illustrated refer to pre-adjusted hinges. Hinges are not supplied pre-adjusted (max. pre-adjustment: $4^{\circ}$ ).

## Accessories

Article
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 <br> with fixing screws for switch |



Couple of plane supports for HP AA and HC AA supplied with fixing screws for switch



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



[^0]:    Please contact our technical service for the list of approved products

[^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.

[^2]:    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

