

MA Series

Operating Instructions for MA-12 & MA-13 Safety Switches

KEEP THIS GUIDE FOR FUTURE REFERENCE

This information is designed to help suitably qualified personnel install and operate Omron Scientific Technologies, Inc. safety switch equipment.

Before using this product, read this guide thoroughly along with any relevant European and/or National Standards e.g. Machinery Directive 89/392/EEC and it's Amendments, Provision and Use of Work Equipment Regulations.

Further information can be obtained from
Omron Scientific Technologies, Inc.

Description

The MA-12 & MA-13 safety switches are magnetically operated non-contact safety switch for use in machine guarding applications.

The non-contact operation makes the MA-12 & MA-13 easy to install and tolerant to misalignment, providing a simple and reliable solution to machine guard interlocking.

The MA-12 & MA-13 are manufactured in a robust ABS housing, and both switch and actuator are fully sealed to IP67 and suitable for use in wet or dusty environments

With correct installation, these safety switches comply with the guidelines given in EN1088.

Operation

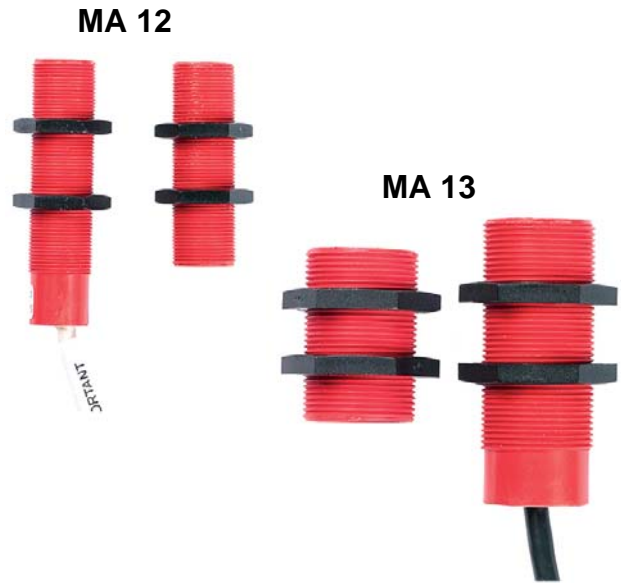
When the safety switch and actuator are within the specified operating range, the **Safety Contacts** will be closed and the **Auxiliary Contact** will be open (See table on page 3 for switching distances)

When the actuator moves out of the operating range, the **Safety Contacts** will open, the **Auxiliary Contact** will close for indication.

The safety switches and actuators are designed to approach each other from most angles. When the switch is closed the targets on the printed face of the switch must be aligned.

Applications

- Machinery guards where door locking is not required.
- Food and Beverage packing/filling systems
- Dairy
- Pharmaceutical
- Paper Industry
- Can Forming and Filling, (Aluminum, Steel, Plastic)
- Semiconductor Manufacture/Assembly.



Approvals

CE	Complies with the relevant sections of the CE marking directive.
UL	UL 508, Industrial Control Equipment

EUROPEAN DIRECTIVES

- Machinery Directive 98/37/EC
- Low Voltage Directive 73/23/EC
- Electromagnetic Compatibility Directive 89/336/EC

EUROPEAN STANDARDS

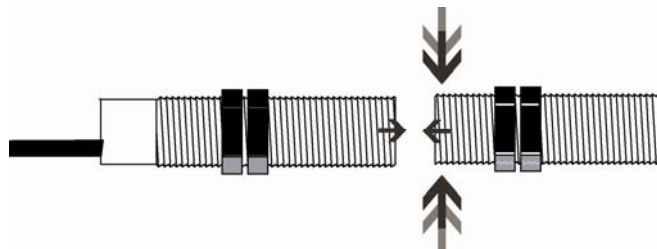
EN292	Safety of Machinery Basic concepts, general principles for design.
EN 60204	Safety of Machinery Electrical equipment of machines.
EN 954-1	Safety of Machinery Safety related parts of controls systems
EN 1088	Interlocking devices associated with guards.
EN 60947-5-3	Safety of Machinery Specification for low voltage switchgear and control gear.

Declaration Conformity

A Declaration of Conformity can be obtained from the Omron Scientific Technologies, Inc. web Site: www.sti.com

Mounting

The MA-12 & MA-13 safety switches can approach each other from most angles. When the guard is closed the targets on the printed face of the switch and actuator must be aligned.



Mount the switch on to the machine frame and the actuator on to the opening edge of the door. Always try to mount the switch on non-ferrous material. (*Ferrous materials may reduce the switching distance.*)

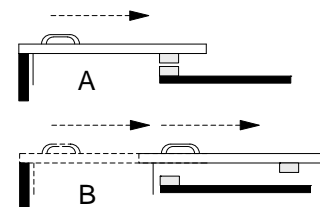
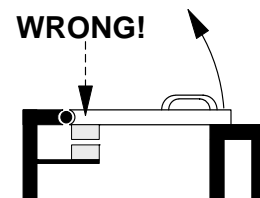
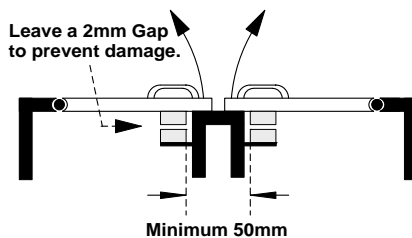
Do not use the safety switch as a door stop.

Leave a minimum of 50 mm between any adjacent switches.

EN 1088

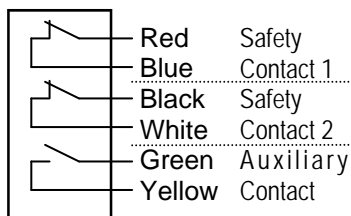
Provides some mounting suggestions, see example opposite.

When fixing the safety switch to a sliding door (A), ensure that when the door is opened (B) it is not easily accessible, helping prevent the system being overridden.

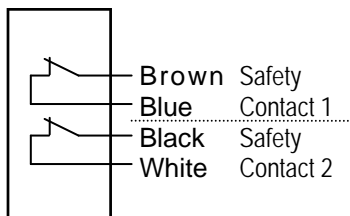


Contacts & Connections

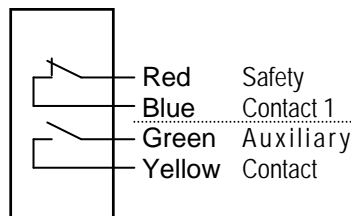
MA-13AP21C3
MA-13DP21C3



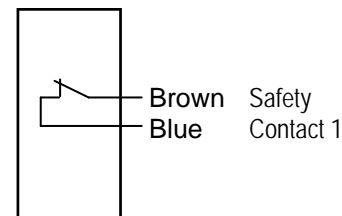
MA-13AP20C3
MA-13DP20C3



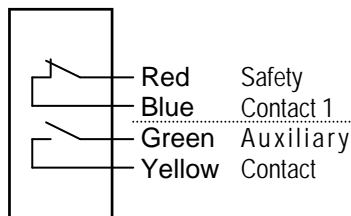
MA-13AP11C3
MA-13DP11C3



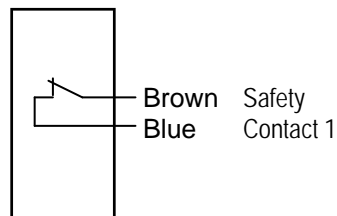
MA-13AP10C3
MA-13DP10C3



MA-12AP11C3
MA-12DP11C3



MA-12AP10C3
MA-12DP10C3



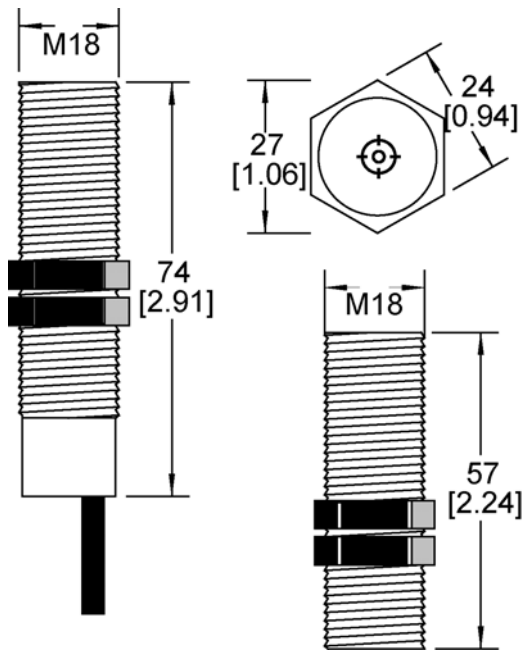
All Safety contacts should be fused externally

	Safety Contact External Fuse AC	Safety Contact External Fuse DC
MA-13	1.6 Amps quick blow	0.8 Amps Quick Blow
MA-12	1.6 Amps quick blow	0.8 Amps Quick Blow

Dimensions

MA-12 RED ABS HOUSING

Dimensions in mm and [inches in brackets]

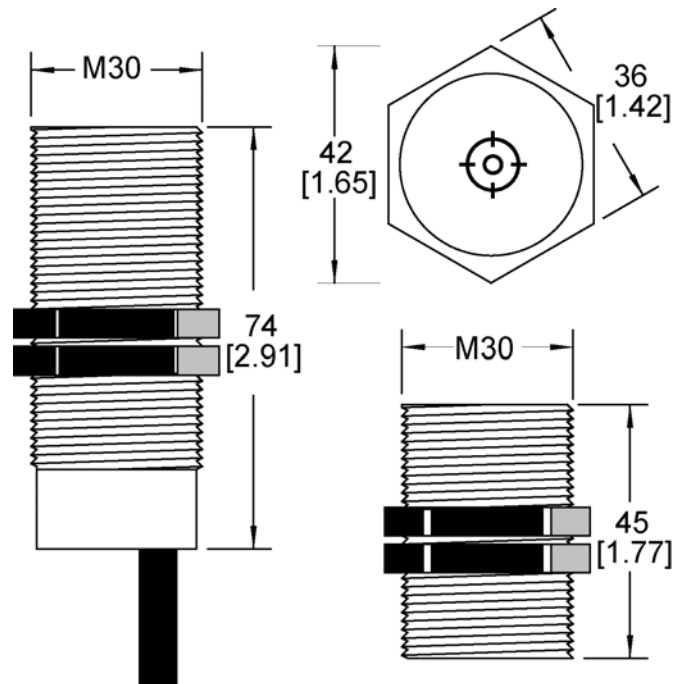


SWITCH

ACTUATOR

MA-13 RED ABS HOUSING

Dimensions in mm and [inches in brackets]



SWITCH

ACTUATOR

Technical Specifications

Type		AC	DC
Contact Arrangement	2 x N/C Safety & 1 x N/O Aux. 2 x N/C Safety 1 x N/C Safety & 1 x N/O Aux. 1 x N/C Safety	MA-13AP21 MA-13AP20 MA-13AP11, MA-12AP11 MA-13AP10, MA-12AP10	MA-13DP21 MA-13DP20 MA-13DP11, MA-12DP11 MA-13DP10, MA-12DP10
Safety Contact Rating		230Vac/2Amps	30Vdc / 1Amp Inductive/Resistive
Safety Contact Operating Distance	MA-12 MA-13	10mm ON / 30mm OFF 10mm ON / 35mm OFF	10mm ON / 30mm OFF 10mm ON / 35mm OFF
Safety Contact Close/Drop/Bounce		3ms / 2.1ms / 0.7ms	3ms / 2.1ms / 0.7ms
Auxiliary Contact Rating		15W / 10VA	15W / 10VA
Auxiliary Contact Operating Distance	MA-12 MA-13	7mm OFF / 14mm ON 7mm OFF / 20mm ON	7mm OFF / 14mm ON 7mm OFF / 20mm ON
Auxiliary Contact Close/Drop/Bounce		0.5ms / 0.3ms / 0.7ms	0.5ms / 0.3ms / 0.7ms
Internal Fuse		2Amp Fast Acting	1Amp Fast Acting
External Fuse (Customer Supplied)		1.6 Amps Fast Acting	0.8 Amp Fast Acting
IP Rating		IP67	IP67
Vibration / Shock		50—100Hz / 10g	50—100Hz / 10g
Operating Temperature		-10 to +55C	-10 to +55C
Mounting & Fixture		Target to Target	Target to Target
Connection		Pre-wired cable	Pre-wired cable
Construction		Red ABS Resin Filled	Red ABS Resin Filled

Specification Changes

In the interest of product development, specifications are subject to change without notice.

Note

The safety contacts of the Omron Scientific Technologies, Inc. switches are described as normally closed (N/C)
i.e. With the guard closed, actuator in place, and the machine able to be started.

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