

MF Series

Operating Instructions for MFS-11 & MFS-12 Safety Switches

CAUTION

This information is designed to help suitably qualified personnel install and operate STI 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
STI

KEEP THIS GUIDE FOR FUTURE REFERENCE

Description

The MFS safety switches are electronically operated non-contact safety switches for use in machine guarding applications.

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

The electronic switching provides additional security and a single point switching, leading to a more reliable and secure long term switching solution. The switch and actuator are IP67 rated and can be used in wet or dusty environments and are ideal for connecting to any safety relay.

Operation

The MFS-12 has 2xN/C contacts and 1xN/O contact along with a dual color LED for diagnostics.

The MFS-11 has 2xN/C contacts or 1xN/C contact and 1xN/O contact along with a Green LED for diagnostics.

When installed on a machine guard, power is applied, and the switch and actuator are within the specified operating range (See table on page 4 for switching distances). The **N/C contacts** will be closed and the **N/O contact** will be open. The indicator LED will be green.

When the actuator moves out of the operating range, the **N/C contacts** will open the **N/O contact** will close for indication. The MFS-12 dual color LED will be RED, the MFS-11 LED will not be illuminated.

The MFS safety switch and actuator have an 8 mm switching distance and can approach each other from most angles. When the switch is closed the targets on the printed face of the switch must be aligned. To avoid physical damage, do not use the switch and actuator as a stop, set a 2 mm gap for best operation and tolerance to machine guard vibration.

Applications

Interlocked guards where additional security required.
Door locking is not required.

Food and Beverage packing/filling systems,
Dairy, Pharmaceutical, Paper Industry,
Can Forming and Filling (Aluminum, Steel, Plastic),
Semiconductor Manufacturing/Assembly.

MFS-11



MFS-12



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

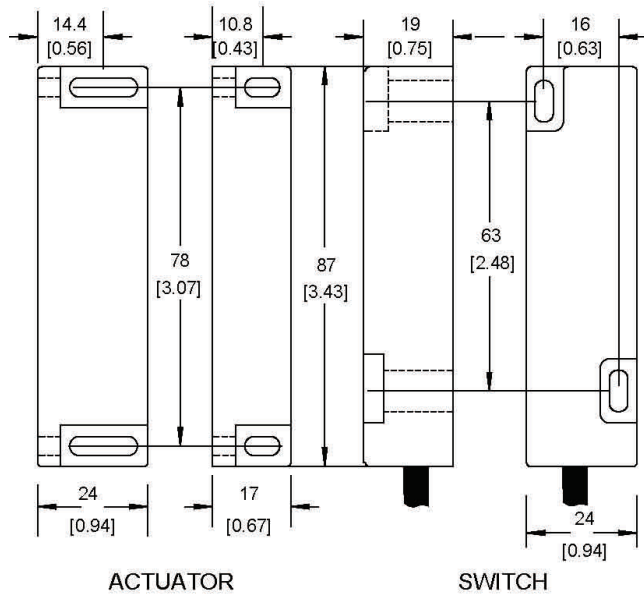
EN292	Safety of Machinery Basic concepts, general principles for design.
EN 60204	Safety of Machinery Electrical equipment of machines.
EN 954-1	Safety of Machinery Safety related parts of controls systems
EN 1088	Interlocking devices associated with guards.
EN 60947-5-3	Safety of Machinery Specification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

Declaration of Conformity

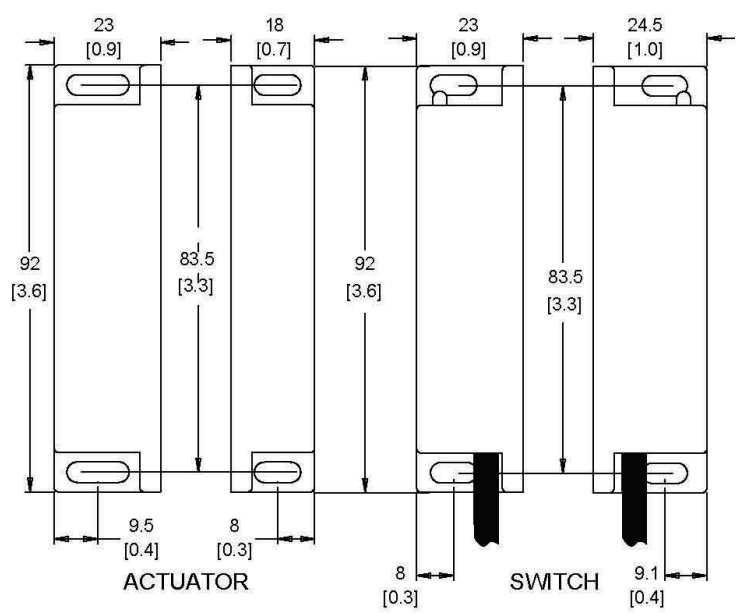
A Declaration of Conformity can be obtained from the OMRON STI Web Site: WWW.STI.COM

DIMENSIONS

MFS-11



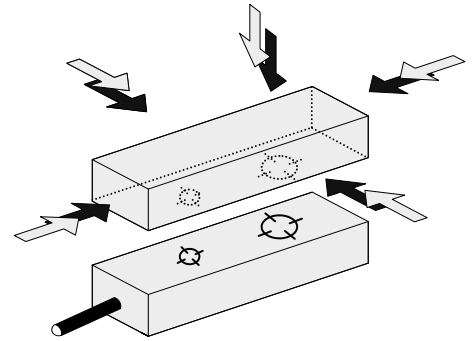
MFS-12



DIMENSIONS IN MM[INCHES]

MOUNTING

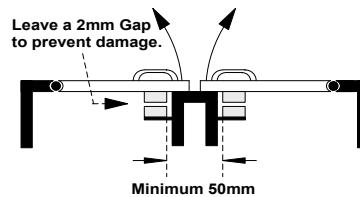
The MFS safety switches can approach each other from most angles. When the guard is closed the targets on the printed face of the switch and actuator must be aligned.



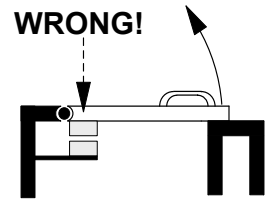
Mount the switch on to the machine frame and the actuator on to the opening edge of the door. Always try to mount the switch on non-ferrous material. (*Ferrous materials may reduce the switching distance.*)

Use the tamper proof screws provided to make more secure.

Do not use the safety switch as a door stop. Leave a minimum of 50 mm between any adjacent switches.



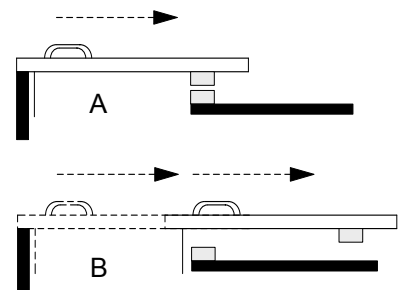
WRONG!



EN 1088

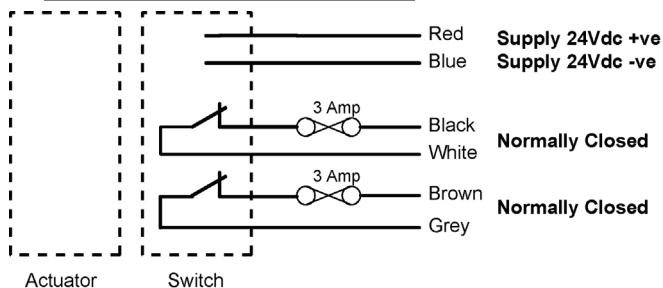
Provides some mounting suggestions, see example opposite.

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.

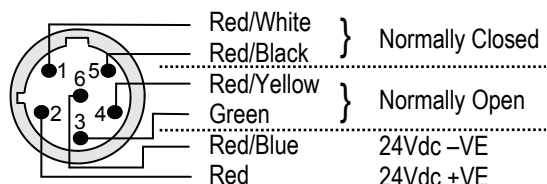


CONTACTS, CONNECTIONS & FUSES

MFS-11P20

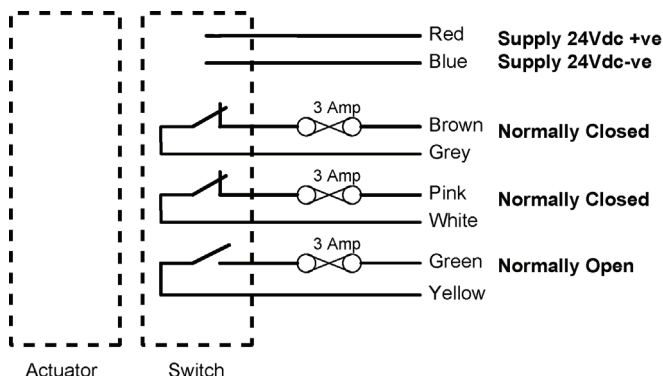


MFS-11P20CC

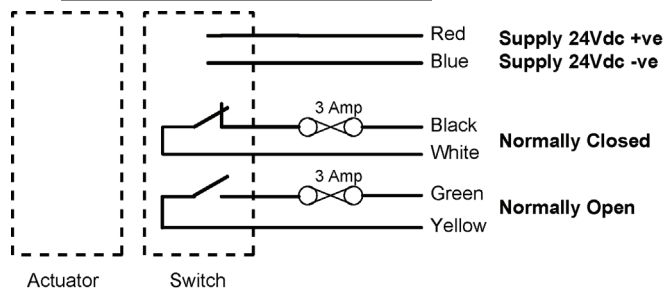


The MFS-11 is available with an IP67, 6 pole quick disconnect. Connector specification: 6-pin, Micro Dual Key-way, 1/2" -20UNF

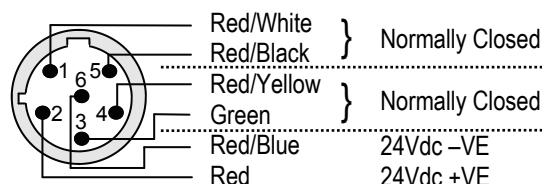
MFS-12P21



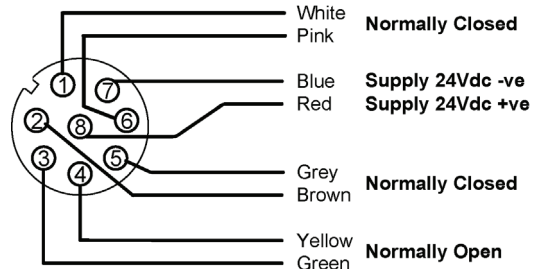
MFS-11P11



MFS-11P11CC



MFS-12P21CC



The MFS-12 is available with an IP67, 6" (150mm), 8 pole 'Pig Tail' connector. Connector specification: 8-pin, Micro Single Key-way, M12 x 1

NOTE : MFS Contacts shown when the actuator is in place.

OPERATION

MFS-11

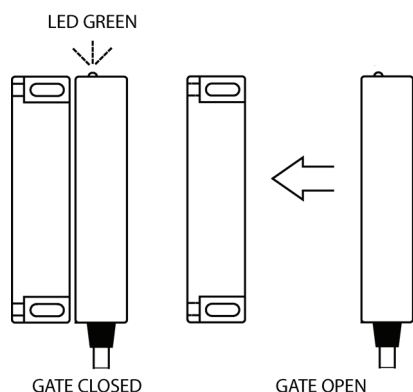
1 POWER ON, GATE CLOSED

When the switch has power and the actuator is in place, the LED will be GREEN. The N/C contact(s) will be closed and the N/O (dependant on option) contact will be open.

2 POWER ON GATE OPEN

When the switch has power and the actuator is out of range, the N/C contact(s) will be open and the N/O (dependant on option) contact will be closed.

MFS-11



MFS-12

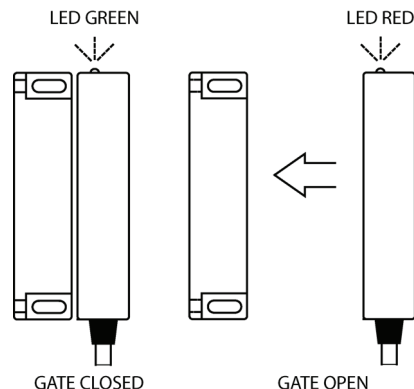
1 POWER ON, GATE CLOSED

When the switch has power and the actuator is in place, the LED will be GREEN. The N/C contacts will be closed and the N/O contact will be open.

2 POWER ON GATE OPEN

When the switch has power and the actuator is out of range, the LED will be RED. The N/C contact will be open and the N/O contact will be closed.

MFS-12



TECHNICAL SPECIFICATION

TYPE	MFS-11		MFS-12	
Power Supply	24vDC		24vDC	
Power Consumption	2VA / 2W		2VA / 2W	
Contacts Arrangements:	MFS-11P20 MFS-11P11	2xN/C 1xN/C + 1xN/O	MFS-12P21	2xN/C + 1xN/O
N/C Contact Rating	AC : 230Vac / 2A DC : 30Vdc / 2A		AC : 230Vac / 2A DC : 24Vdc / 2A	
N/O Contact Rating	AC : 230Vac / 2A DC : 30Vdc / 2A		AC : 230Vac / 2A DC : 24Vdc / 2A	
Contact Operating Distance	8mm ON / 10mm OFF		8mm ON / 10mm OFF	
External Fuse (Customer Supplied)	3 Amps Fast Acting		3 Amps Fast Acting	
LED Indication	Green		Dual Color Red / Green	
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		Pre-wired	
Cable length	Max 100 meters		Max 100 meters	
Construction	Blue ABS Resin Filled		Blue ABS Resin Filled	

Note

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

Specification Changes

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

OMRON

STI

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