Delayed Key Release Safety Interlock Switches with Guard Locking FD

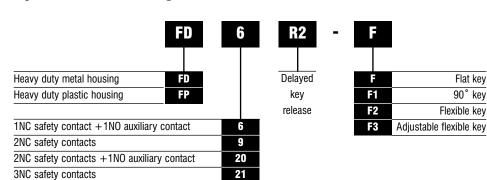


Safety interlock switches with delayed key release to allow for machine run-down

- Machine re-start can occur only after the key has been inserted and locked
- Suitable for the protection of hinged, sliding and lift-off guards
- Choice of stainless steel keys: right-angle, flat, flexible and adjustable flexible
- Can be operated only by one of the keys provided, not by screwdrivers, fingers, etc
- Positive break of NC safety contacts according to BS EN60947-5-1, VDE 0660 part 206 and IEC 337-1
- Available with a wide choice of contact block configurations
- Heavy duty, die-cast metal alloy housing models
- Heavy duty, impact resistant, self-extinguishing, glass-reinforced thermoplastic housing models
- IP66
- Conforms to BS EN60204-1 and BS EN1088
- UL and CUL approved



Options and ordering codes

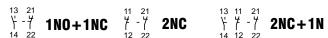


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Terminal connections

1NC safety contacts +2NO auxiliary contact

Contact arrangements with key inserted (guard closed).



- The safety circuit must be connected to the NC contacts.
- Terminal screws are M3.5 with rising cable clamps for ease of wiring.
- Terminal numbering in accordance with EN50013.
- \blacksquare The maximum terminal screw torque is 0.8Nm (8kg cm).
- Fuse protection required against short-circuit in the safety circuit: 10A HRC quick-blow max.
- An earth terminal is provided inside the metal housings.
- Plastic housing versions are double-insulated for electrical safety.
- Contact blocks are not removable due to interlocking with the positive break system.
- One conduit entry PG13.5.

Models conform to the following standards:

Low Voltage Directive 73/23/CEE, Directive 93/68/CEE, Machinery Directive 89/392/CEE

IEC 947-5-1, BS EN60947-5-1, CEI EN60947-5-1, IEC 204, BS EN60204, BS EN418, BS EN292 UL 508, CSA C22-2 no. 14, VDE 0113, IEC 337-1, NFC 63-140, VDE 0660, BS EN1088

Positive opening of the contacts in conformity with: VDE 0660-206, IEC 947-5-1, BS EN60947-5-1, CEI EN60947-5-1

IP rating: IP66

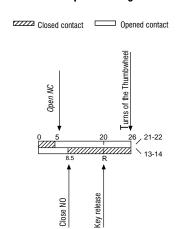
Minimum key actuating speed 1mm/sec. Maximum key actuating speed 0.5m/sec. Key holding force >1000N (100kg)

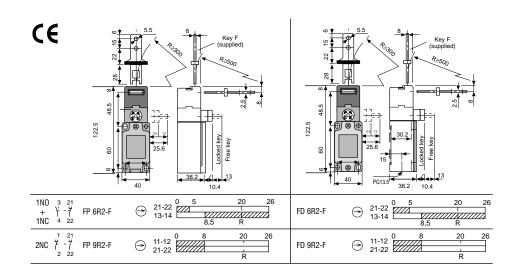
Delayed Key Release Safety Interlock Switches with Guard Locking FD continued



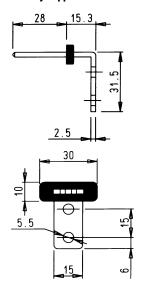
Dimensions (mm)

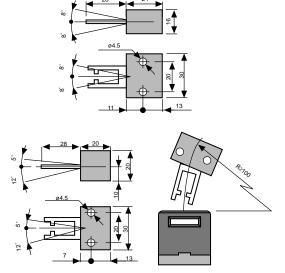
Thumbwheel operation diagram





90° key supplied with 'F1' models





Flexible key supplied with 'F2' models. The tongue can flex in four directions for applications where the door alignment is not precise.

Adjustable, flexible key supplied with 'F3' models. The tongue can be adjusted in four directions for doors of small dimensions where the door radius is down to 100mm.

Models conform to the following standards:

Low Voltage Directive 73/23/CEE, Directive 93/68/CEE, Machinery Directive 89/392/CEE

IEC 947-5-1, BS EN60947-5-1, CEI EN60947-5-1, IEC 204, BS EN60204, BS EN418, BS EN292, UL 508, CSA C22-2 no. 14, VDE 0113, IEC 337-1, NFC 63-140, VDE 0660, BS EN1088

Positive opening of the contacts in conformity with: VDE 0660-206, IEC 947-5-1, BS EN60947-5-1, CEI EN60947-5-1

IP rating:

FR/FX: IP65 FD/FP/FL: IP66

Delayed Key Release Safety Interlock Switches with Guard Locking FD continued



Function

These switches can be applied on machines where the possibility of danger is extended over a limited time, ever after the stop device of the machine has been operated (mechanical inertia of band saws, milling machines, etc.)

The ideal applications are those cases where the guard protection is opened only occasionally during normal practice and the risk does not warrant the additional circuitry required for solenoid locking key operated safety switches.

As the delayed key release switches do not require a power supply or additional timers, they can be easily installed on existing machines without radically changing the electrical equipment.

The switch is fixed to the machine and the key to the movable protection guard.

Once the switch is installed, it will firmly retain the key inside itself. To open the protection guard, the release thumbwheel must be rotated. After 5 turns, the NC safety contacts will be opened by the positive break mechanism, but the key will not be released until a further 15 turns, i.e. after approximately a further 20 seconds.

This delay provides sufficient time for most motor driven machinery of low or medium inertia to come to a standstill.

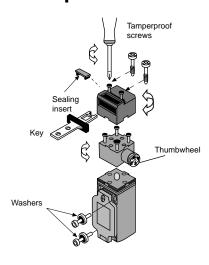
To re-start the machine, the guard must be closed and the thumbwheel rotated, which locks the key inside the switch and then closes the safety contacts.

An advantage of the delayed key release switches is that they are not dependent on additional safety switches or careful positioning and externally mounted cams to avoid the possibility of being overriden which are problems associated with time delay bolt switches. Without careful consideration to these points, the bolt can be screwed back when the guard is open, allowing the machine to re-start.

With delayed key release switches, the thumbwheel cannot be screwed back until the guard is closed.

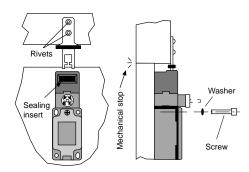
For machines where the run-down time can vary or is longer than 20 seconds or where very frequent access is required to the dangerous parts, it would be preferable to use IMO Solenoid Locking Key Operated Safety Switches, (see the data sheet on the following pages).

Head options



- Top and side entry points with sealing insert to cover the entry point not being used.
- The head is rotatable in 90° increments giving 8 possible key entry points: 4 from the top and 4 from the sides.
- The thumbwheel section can also be rotated in 90° increments, independently from the head, which gives 32 possible switch configurations.
- The keys have sealing gaskets to ensure the mechanism is fully protected when the guard is closed
- When the guard is not closed, ensure that dirt and swarf do not enter the exposed key entry point.
- Maximum head screw torque 0.8Nm (8kg cm).
- Mechanical life of the actuator head >106 operations.
- After adjusting the head and thumbwheel to the required positions, it is advisable to fix the head with the 2 tamper-proof screws which are supplied inside the switch.

Installation



- Always use washers under the heads of the screws.
- The switch must never be used as a mechanical end stop.
- \blacksquare It is recommended in BS EN1088 that the key is fixed to the moving part with rivets.
- Verify repeatedly the correct operation of the switch. That is, when the machine is started, it must not be possible to open the guard. Also, it must not be possible to start the machine unless the guard is closed and locked using the thumbwheel.

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Delayed Key Release Safety Interlock Switches with Guard Locking FD continued



Applications

