

# YASKAWA

## Elevators and Parking Machines With Bestact

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### *Bestact for Elevators and Parking Machines*



ISO9001 ISO14001  
JQA-0792 JQA-EM0202

# Bestact's high reliability provides stability for high-speed elevator operation.

Since Bestact, a hermetically sealed glass contact power reed switch; was placed in service over 30 years ago; over 18 million have been used worldwide in applications such as transit train control, elevators and electric power facilities. Along with the construction of more high-rise buildings, the elevators that service them require more stable, reliable operation with ease of maintenance. Automatic monitoring of elevators now occur in hotels, apartment houses, department stores and railway yards around the clock by host computers.

Safety and amenity demands computer control automation for high-speed elevator operation and with a high frequency of floor calls. For the sensors which detect stop position of elevator car and parking pallet,

maintenance-free proximity switches with high reliability and long-life are the sensor of choice.

Good elevator control requires reliable notification of "stop position of the car", "stop operation when the door opens" and "absolute position of the car" to the controller. In addition to this, high contact opening capacity is needed for switching magnetic switches (solenoids) in motor break circuits to assure passengers' safety.

Bestact is often used in the above-mentioned applications as power interface devices for elevators with high reliability. The following showcases some examples of actual use.

## ■ Safety devices for elevators

Safety devices for elevators utilizing computer control circuit are often used in conjunction with landing-zone detector and door-zone detector switches.

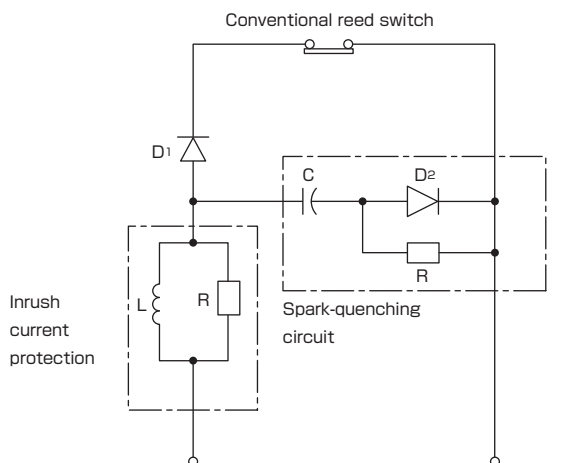
### Features of magnetic proximity switches incorporating Bestact

- 1) No power supply needed.
- 2) Quick operating time: 10m/sec response for high-speed applications.
- 3) Suitable for frequent use: mechanical life is 100 million times or more.
- 4) Large contact opening capacity: 1 million times or more, energizing the load of 240VAC, 5A making and 0.5A breaking. Ideal for magnetic contactor coils which control motor circuit operation.
- 5) High contact reliability: failure rate is  $4.6 \times 10^{-9}$  (1/time) or less for logic input circuits.

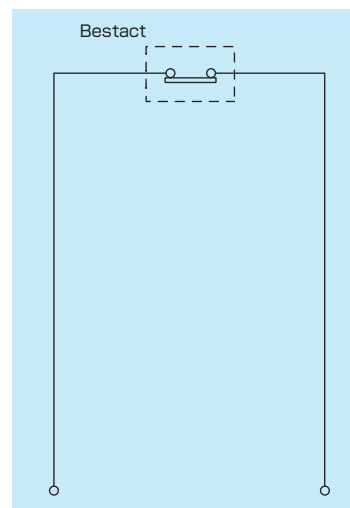
Conventional reed switches have very small contact closing current capability and they often exhibit contact welding when used in long wiring cables because the cables themselves act as capacitors over long distances. When the switch operates, high inrush current is often seen leading to contact sticking (micro-welds) or even welding. A protective circuit is often used that can lessen this

inrush but also a spark quenching devices, thereby creating a more complicated circuit (see below diagram).

Bestact has large contact closing current of 15A and large contact switching capacity, so it needs no protective circuit. Therefore, circuitry is simplified and reduces the total cost while improving reliability dramatically.



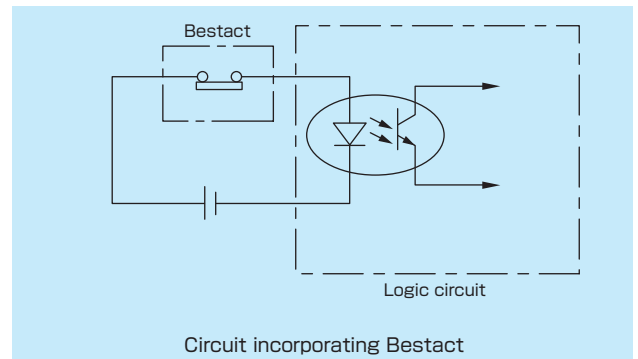
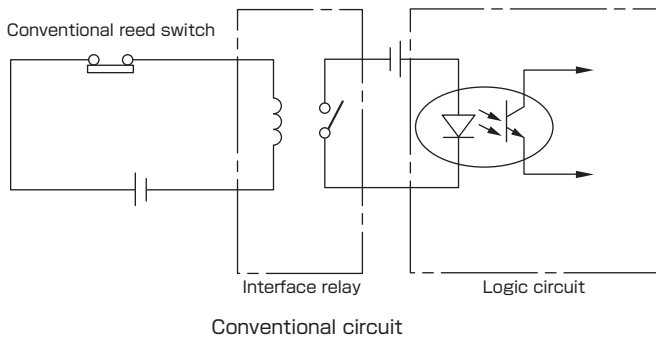
Circuit incorporating conventional reed switches



Circuit incorporating Bestact

Conventional reed switches are often used as an input device in conjunction with interface relay because contact reliability will go down in an adverse environment or when neglected for a long time. Bestact is a hermetically sealed contact, which exhibits

no environmental or deterioration over time. This leads to long-term stable contact reliability. Therefore, no interface relay is needed and direct input is achievable while reducing control circuitry costs.



### Comparison of various switches used for elevators

	High frequency oscillation type proximity switch	Light activated switch	Vane-type switch (Conventional reed switch)	Vane-type switch (Bestact)
Detection accuracy	◎	○	○	◎
DC power source	Necessary	Necessary	Not necessary	Not necessary
Application for control system	△	△	△	◎
Reliability	○	○	△	◎
Facilities for use	△	△	△	○
Circuits and wiring				
Environmental condition	○	△	△	◎

◎Excellent   ○Good   △Normal

Japanese Ministry of Land, Infrastructure and Transport mandates the use of safety devices that cannot allow car movement until all exit doors of elevator are closed. However, there is an exception to this rule in the immediate door zone area, so door zone detection is required. Moreover, when moving away from the

door zone area, safety devices are required to make an emergency stop independently from controlling devices. Similarly, European standard EN81 and North American standard ASME stipulate landing-zone and door-zone control in this fashion.









