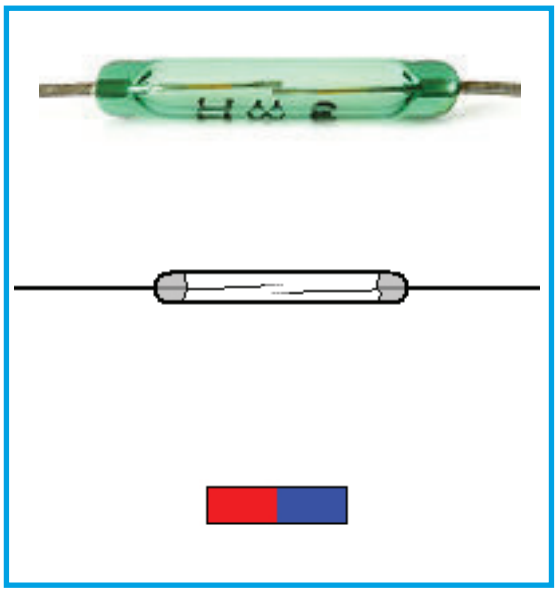
Information Sheet concerning Reed Contacts



Protection of reed contacts

Capacitive loads and lamp loads

Contrary to inductive loads the inrush currents are increased in case of capacitive loads and lamp loads. These inrush currents can cause failures – up to contact welding.

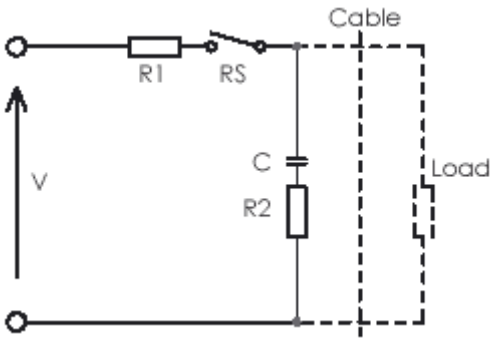
When charged capacitors (e.g. cable capacitors) are switched, there is a sudden discharge. The intensity of this discharge depends on the capacity and the length of the supply cable, which is regarded as a series resistor, to the switch. The peak discharging current is reduced considerably by a series resistor to the capacitor. Its dimensioning is determined by the possibilities of the respective switching circuit. It should always be so big that the discharging current is limited to a permissible value.

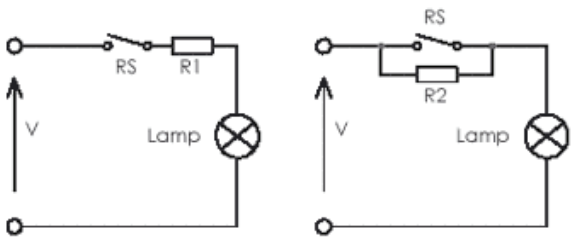
These considerations also apply to the charging of the capacitor

Switching of lamp loads

The resistance of incandescent lamp filaments is about ten times smaller in the cold state, i.e. not switched on, than in the incandescent state. This means that a current ten times higher than the current in the static state of lamp, flows for a short time when the lamp is switched on. This ten times higher current inrush can be reduced to a permissible level by means of a current limiting resistor connected in series. It is also possible to switch a resistor in parallel to the switch. Such a resistor always heats up the lamp filament in the switched off state so much that it just is not incandescent.

Both kinds of protection lead to loss of power.





Lamp load with parallel or current limiting resistor across the switch

The following nomograph can be used for determining contact arc suppression for inductive loads.

Example 1: I = 0,1 A
V = 230 V
C = 0,001 µF
R = 340 Ω

Example 2:
If the current inrush is critical use the below nomograph to determine the minimum resistance.
I = 0,5 A
Rmin = 400 Ω