



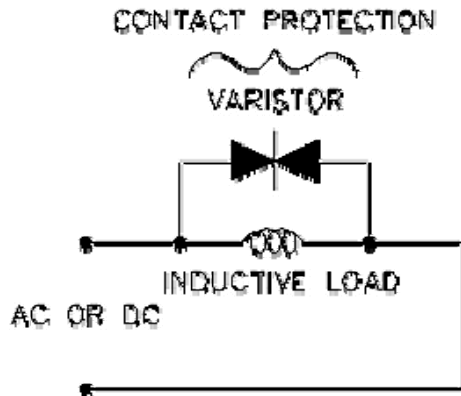
# Technical Bulletins

## Switch Protection for Inductive Loads

Inductive load devices produce electrical spikes that reduce the useful life of components like pushbuttons, selector switches, PLC input cards, and Bimba switches. Bimba switches need to be protected when they are connected to inductive loads. Inductive loads are devices such as relays, motor starters, solenoids, and motors. Contact protection devices filter out the electrical spikes and should be added when employing any sort of inductive load.

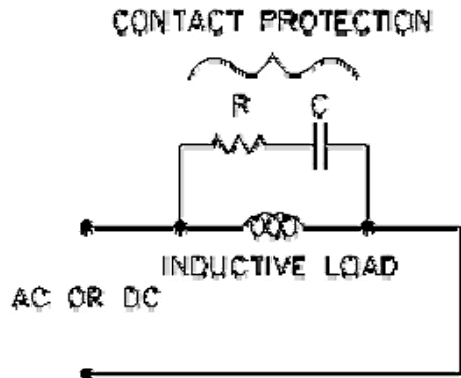
Bimba switches can be damaged by inductive loads even when inductive loads and Bimba switches are on separate assemblies. Electrical spikes are transmitted across ac lines and pass through DC power supplies.

The most commonly used contact protection devices for inductive loads are Varistors and RC networks. These protection devices are always connected in parallel to the inductive load. For best results, locate the protection device as close as possible to the inductive load. If the contact protection can't be placed around the inductive load, place the contact protection in parallel to the Bimba switch. See diagrams that follow:



### Varistor:

Select a varistor that has a "varistor voltage" 10 to 15% higher than your operating voltage. You will want a varistor that is properly sized to provide long term protection. Contact the manufacturer for proper sizing.



### RC Network:

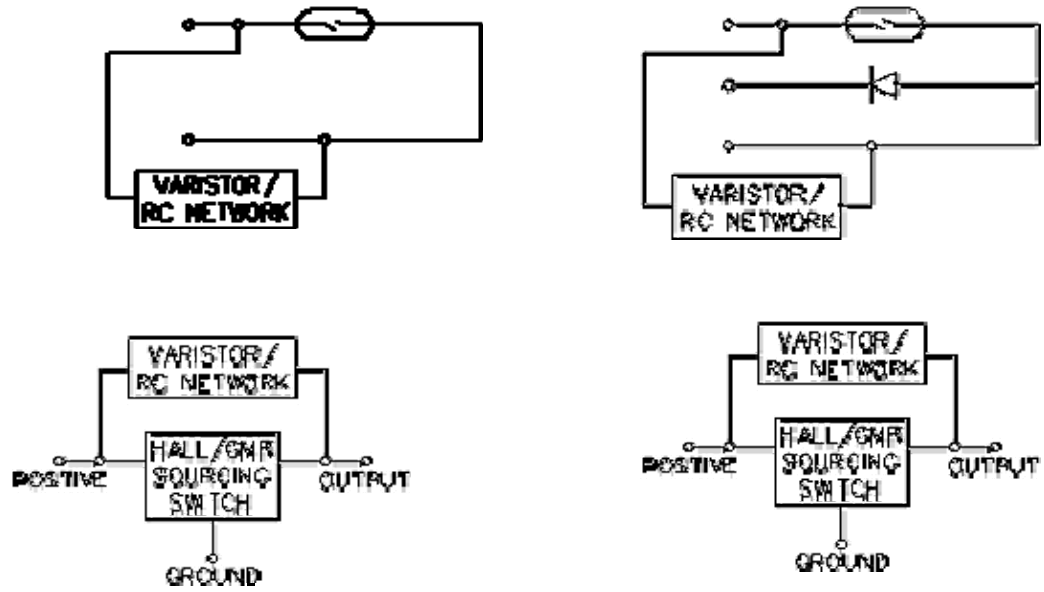
The following formulas will help you determine appropriate values for an RC network. Note: RC networks are not recommended for use with Triac's.

$$\text{Capacitor Value in micro-Farads} = I^2 / 10$$
$$\text{Resistor Value in Ohms} = V / (10 \times I \times (1 + (50 / V)))$$

I is amperes of load current immediately prior to opening of switch contacts.

V is source voltage immediately prior to closing of switch contacts.

Contact protection applied across Bimba switches:



The information presented is in Bimba's best engineering opinion and should be used for reference only. Recommendations derived should be verified under actual operating conditions. Bimba reserves the right to change specifications without prior notice.

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