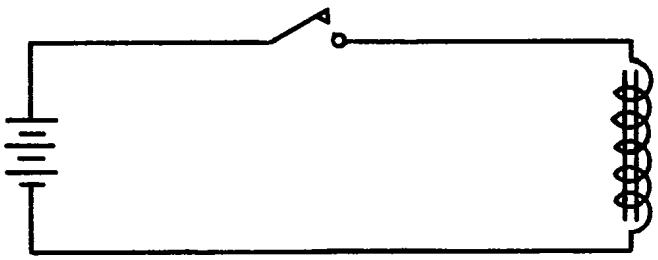
EDAL SERIES R SELENIUM CONTACT PROTECTORS

CONTACT PROTECTION FOR ARC SUPPRESSION

Edal selenium contact protectors are an excellent solution to contact arcing common to switched inductive devices. Relays, stepping switches, electro-magnets, solenoids, clutch magnets, computers, thermostats and other inductive devices designed to have their electrical circuits interrupted by means of metallic contacts are affected by contact arcing. The result can be erosion and pitting of the contacts, mechanical locking and sticking of contacts, radio-noise radiation and insulation puncture and breakdown. Edal selenium contact protectors connected across the inductive circuit element suppress the voltage surge that occurs from switching and offer positive protection against arcing.

THE CAUSE OF ARCING IN INDUCTIVE CIRCUITS



In this schematic, by closing the switch contacts, the current flow builds up to a steady state value. The flow of current has made a magnet of the iron core producing a magnetic field. When the contacts are opened, the magnetic field will collapse and generate a voltage proportional to $-L\frac{di}{dt}$ which will tend to keep current flowing in the same direction. This voltage (inductive kick) can reach very high values, many times the input voltage, which will be sufficient to sustain an arc across the open contacts.

HOW CONTACT PROTECTORS WORK

Selenium contact protectors are similar in performance to a half-wave rectifier. These semiconductor devices readily pass current in one direction and oppose current flow in the opposite direction. By placing this contact protector across the coil, it will not load the coil under normal operating conditions. However, when the switch is opened, it will dissipate the released energy of the magnetic field and keep the voltage below the critical level where an arc across open contacts can occur.

For DC applications, a half-wave configuration has been developed by Edal Industries that offers an economical solution to the problem. They provide long life, low leakage current and reliable protection.

For DC circuits where high speed and drop out time is important, a back-to-back configuration is suggested. This circuit utilizes the characteristics of reduction of resistance with increasing voltage and thereby allows current to be reduced rapidly.

For AC applications, a back-to-back configuration provides an identical number of cells in each arm of the device. It utilizes the same principle as the high-speed DC types. Circuit diagrams for these three types of Edal contact protectors are illustrated on the reverse of this sheet.

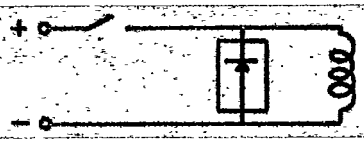
CONSTRUCTION OF CONTACT PROTECTORS

Edal Series R contact protectors are ruggedly constructed tubular phenolic housings with epoxy ends meeting severe environmental conditions. In addition to the designs listed which handle from 26 to 250 coil voltage and a current range of 150 mA to 1.2 amps, other electrical ratings and constructions including epoxy packages and spring clips are available on request.

SPECIFICATIONS FOR CONTACT PROTECTORS

I. STANDARD DC SUPPRESSORS

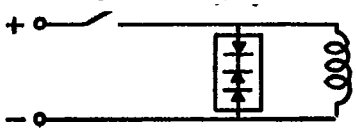
For circuits where high speed and fast drop out is not necessary.



COIL VOLTAGE		COIL CURRENT 150mA RECTFR. DIA. 15/64"		COIL CURRENT 350mA RECTFR. DIA. 19/64"		COIL CURRENT 650mA RECTFR. DIA. 3/8"		COIL CURRENT .9AMP RECTFR. DIA. 1/2"		COIL CURRENT 1.2AMP RECTFR. DIA. 39/64"	
MIN.	MAX.	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH
—	25	13R1	5/8	14R1	5/8	16R1	5/8	166R1	5/8	17R1	5/8
26	50	13R2	5/8	14R2	5/8	16R2	5/8	166R2	5/8	17R2	5/8
51	75	13R3	5/8	14R3	5/8	16R3	5/8	166R3	5/8	17R3	5/8
76	100	13R4	5/8	14R4	5/8	16R4	5/8	166R4	5/8	17R4	5/8
101	125	13R5	23/32	14R5	23/32	16R5	23/32	166R5	23/32	17R5	23/32
126	150	13R6	3/4	14R6	3/4	16R6	3/4	166R6	3/4	17R6	3/4
151	175	13R7	13/16	14R7	13/16	16R7	13/16	166R7	13/16	17R7	13/16
176	200	13R8	27/32	14R8	27/32	16R8	27/32	166R8	27/32	17R8	27/32
201	225	13R9	27/32	14R9	27/32	16R9	27/32	166R9	27/32	17R9	27/32
226	250	13R10	7/8	14R10	7/8	16R10	7/8	166R10	7/8	17R10	7/8

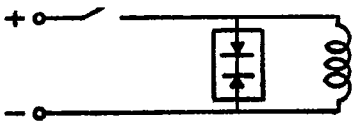
II. HIGH SPEED DC SUPPRESSORS

For circuits where high speed and drop out time is important.



COIL VOLTAGE		COIL CURRENT 45mA RECTFR. DIA. 15/64"		COIL CURRENT 100mA RECTFR. DIA. 19/64"		COIL CURRENT 250mA RECTFR. DIA. 3/8"		COIL CURRENT 440mA RECTFR. DIA. 1/2"		COIL CURRENT 800mA RECTFR. DIA. 39/64"	
MIN.	MAX.	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH
—	25	13R1B1	5/8	14R1B1	5/8	16R1B1	5/8	166R1B1	5/8	17R1B1	5/8
26	50	13R2B1	5/8	14R2B1	5/8	16R2B1	5/8	166R2B1	5/8	17R2B1	5/8
51	75	13R3B2	23/32	14R3B2	23/32	16R3B2	23/32	166R3B2	23/32	17R3B2	23/32
76	100	13R4B2	3/4	14R4B2	3/4	16R4B2	3/4	166R4B2	3/4	17R4B2	3/4
101	125	13R5B2	13/16	14R5B2	13/16	16R5B2	13/16	166R5B2	13/16	17R5B2	13/16
126	150	13R6B2	27/32	14R6B2	27/32	16R6B2	27/32	166R6B2	27/32	17R6B2	27/32
151	175	13R7B2	27/32	14R7B2	27/32	16R7B2	27/32	166R7B2	27/32	17R7B2	27/32
176	200	13R8B2	7/8	14R8B2	7/8	16R8B2	7/8	166R8B2	7/8	17R8B2	7/8

III. AC SUPPRESSORS



COIL VOLTAGE		COIL CURRENT 45mA RECTFR. DIA. 15/64"		COIL CURRENT 100mA RECTFR. DIA. 19/64"		COIL CURRENT 250mA RECTFR. DIA. 3/8"		COIL CURRENT 440mA RECTFR. DIA. 1/2"		COIL CURRENT 800mA RECTFR. DIA. 39/64"	
MIN.	MAX.	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH	PART NO.	LENGTH
—	33	13R1B1	5/8	14R1B1	5/8	16R1B1	5/8	166R1B1	5/8	17R1B1	5/8
34	66	13R2B1	5/8	14R2B2	5/8	16R2B2	5/8	166R2B2	5/8	17R2B2	5/8
67	99	13R3B3	3/4	14R3B3	3/4	16R3B3	3/4	166R3B3	3/4	17R3B3	3/4
100	132	13R4B4	27/32	14R4B4	27/32	16R4B4	27/32	166R4B4	27/32	17R4B4	27/32
133	165	13R5B5	7/8	14R5B5	7/8	16R5B5	7/8	166R5B5	7/8	17R5B5	7/8

EDAL INDUSTRIES, INC.

4 SHORT BEACH ROAD • EAST HAVEN, CONN. 06512