OK RELAYS

PRINCIPLE

The type OK Relay is a fast acting electromagnetic device having a moving core and fitted with four single pole changeover contacts.

Rated for currents up to 10 Amps the contacts are operated by means of a patented method of amplification between the contacts and movable core.

DESIGN FEATURES

Relay OK operation is driven by a moving core electromagnet, whose main gap is at the center of the coil (A), where all the produced flux is available usedand can be totally used. A shoe is fitted to the moving core, this establishes an auxiliary air gap (B) which contributes to attraction force. A plastic washer (C) is placed in the auxiliary air gap to overcome possible adhesion due to magnetic remanence and it acts as a cushion at the end of the core stroke, avoiding metal-on-metal shocks.

The coil itself is shaped as an “elongated” cylinder, the most favorable geometry for good performance: this provides a low mean turn length and it also assists heat dissipation.

The attraction force always exerts itself in the coil axis, and therefore cannot give rise to lateral imbalances as in the cases of classic electromagnets “E” shaped.

In order to get the optimum electromagnetic efficiency, moving core stroke is short. and then amplified through a patented amplification system since Since core motion associated to the optimum air gap of the electromagnet wouldn’t is not sufficient to operate the contacts., a patented amplification system has been designed. This consists of a W shaped mechanism: the center of the W mechanism is linked to the moving core and contacts are connected to the two lower extremities. When the center of the W moves vertically due to the action of the electromagnet, the lower extremities come nearer to each other and moving contacts are driven by W shaped mechanism in this manner. This can be seen in the illustration.

In OK relays, two of these W mechanisms are placed side by side to actuate four contacts.

The outer arms of the W mechanisms are manufactured from a flat piece of beryllium-bronze strip. Each of these outer arms act as return springs for its corresponding contacts, providing separate contact return.

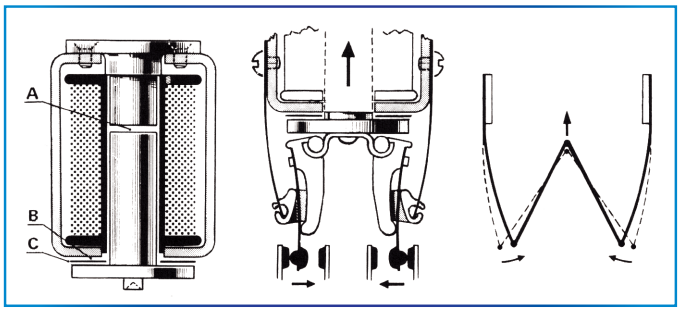
With the presence of W shaped mechanism both optimum electromagnetic efficiency and greater contact distance are possible. Contact forces are of the order of 100 grams (3.52 oz.).

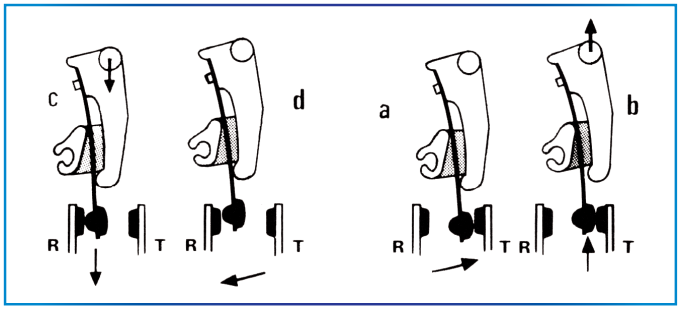
All the contacts are:

- positioned well away from the cover
- well ventilated
- separated from each other by insulating walls

The W shaped mechanism also provides self-cleaning of the contacts by making the moving part sliding on fixed parts (a ➔ b , c ➔ d)

The absence of metal to metal friction, the symmetrical design of the contact arrangement and the lack of heavy impacts provides a life of 100'000'000 operations.





Furthermore, the elimination of return springs (a necessary part of the return mechanism in conventional relays) makes the relay remarkably resistant to impact.

For use in AC, OK relays are supplied through a build-in rectifier bridge to avoid chatter, hum and vibrations in sympathy with the supply frequency and to retain the high efficiency of the electromagnet. The current peak on energizing is also eliminated.

The use of the rectifier offers still other facilities. The same model can operate at frequencies ranging from 40 to 400 Hz.

Operation of the relay is crisp, even with slowly varying A.C. voltage, there is a complete absence of hum and vibration.

Finally, the use of a rectifier enables capacitive time delays to be obtained, like for D.C. relays.

A transparent plastic cover protects the relay from dust and impacts. It has two windows through which the iron yoke protrudes to facilitate cooling and to allow direct mounting of the relay irrespective of the terminals. The terminals are regularly and symmetrically placed 10mm (,394") from each other on one face of the relay. As a result of this arrangement the relay may be plugged in using the smallest possible panel areas.

Type OKS

The type OKS relay has a powerful permanent magnet mounted adjacent to the contacts. When an inductive circuit is broken the resulting arc is rapidly extinguished by the action of the magnetic field exerted by the permanent magnet. The action is to lengthen the passage of the arc by "blowing" it away from the contacts and thus preventing permanent arcing. By this method the D.C. current carrying capacity can be increased of ten times for both the normally open and normally closed contacts.

Type OKFC , OKSFC

The type OKFc OKFC relay has been designed to reduce power consumptions by half. This is achieved by reducing the contact gap. The breaking capacity, however, is satisfactory for most applications and the magnetic blow out device (OKS Fc relay) allows breaking currents of 15 Amps in 120 volts D.C. resistive circuits. Contact reliability equals that of the standard OK relay as contact pressures are the same.

Breaking capacity examples:

CONTACT VOLTAGE	CURRENT	CHARGE	OPERATIONS	CONTACT
120 Vdc	15 A	Resistive	100	Parallel of 2
120 Vdc	8 A	Resistive	2.000.000	Series of 3
120 Vdc	6 A	L/R 10 ms	500.000	Series of 2
120 Vdc	3 A	L/R 10 ms	100.000	
120 Vdc	1 A	L/R 10 ms	500.000	
80 Vdc	25 A	Resistive	100	Parallel of 2
80 Vdc	15 A	L/R 20 ms	100	Parallel of 2
80 Vdc	10 A	Resistive	400.000	
80 Vdc	7,5 A	Resistive	1.500.000	
80 Vdc	5 A	L/R 10 ms	400.000	

Type OKSCD

The type OKSCD relay has been designed for heavy loads, like DC resistive or inductive loads, with contact voltage up to 400Vdc. It is equipped by magnetic blow out device; the contacts are in AgCD (silver contact + cadmium oxide). Suitable also for lighting circuits.

Breaking capacity examples:

CONTACT VOLTAGE	CURRENT	CHARGE	OPERATIONS	CONTACT
400 Vdc	6 A	L/R 10 ms	100	Series of 3
250 Vdc	15 A	Resistive	1.000	
250 Vdc	3 A	L/R 20 ms	300.000	Series of 2
250 Vdc	1 A	L/R 10 ms	30.000	
250 Vdc	1 A	Resistive	1.000.000	Series of 2
250 Vdc	0,1 A	L/R 15 ms	3.500.000	Series of 2
120 Vdc	20 A	Resistive	10.000	Parallel of 2
120 Vdc	10 A	L/R 10 ms	1.000	
120 Vdc	10 A	Resistive	300.000	Series of 2
120 Vdc	5 A	L/R 10 ms	600.000	
120 Vdc	1 A	L/R 40 ms	500.000	
120 Vdc	1 A	L/R 10 ms	1.000.000	

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