

**NOW!  
Time Delays  
to 180 Sec\*.**

\* 5 and 100 second relays with intermittent duty heater only.

*"snap action"*

**10**

**TIMERS & FLASHERS**

## TECHNICAL SPECIFICATIONS

### time delay

5 to 180 seconds.

### time tolerances

The relays are highly repeatable within themselves  
Standard tolerances on time delay -  $\pm 25\%$ . 3 to 10 seconds  
 $\pm 2$  seconds.

### heater data

Standard voltages 6.3, 26.5 and 115 volts, Special voltages  
can be supplied. Voltages used can be either AC or DC.  
Power - 3 Watts.

### contact ratings

115 volts AC 3 amperes resistive  
28 volts DC 3 amperes resistive

### Insulation

Insulated for test voltage of 1000 volts peak between heater  
and contacts; and 500 volts peak across open contacts.

### weight

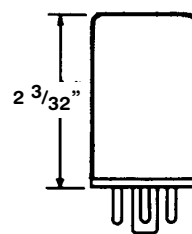
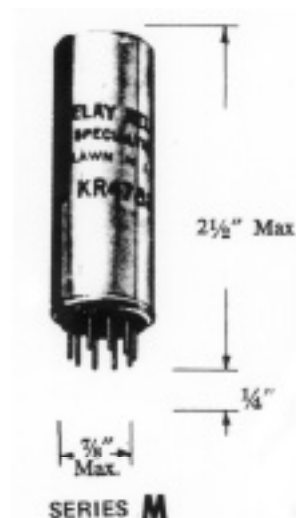
9 pin miniature-less than 1 ounce  
8 pin octal, 1  $\frac{1}{4}$  ounces

### ambient temperature range

Relays are compensated for temperatures of - 65°C to  
+ 100°C. Relays may be operated from - 80°C to + 125°C.

### relay life

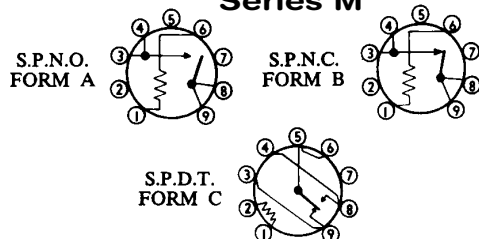
A minimum of 100,000 operations under average operating  
conditions.



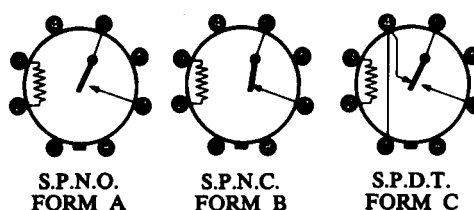
Dimensions are Nominal

## base diagrams

### Series M



### Series W

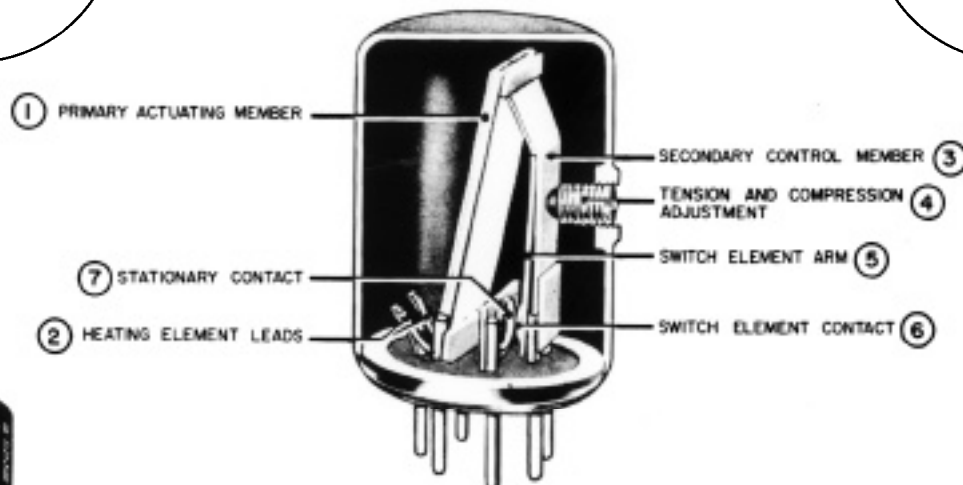


## FEATURES

**HERMETICALLY  
SEALED**

### OPERATIONAL DESCRIPTION

**SUB-MINIATURE  
RUGGED**



**TYPE "FR"**



### SPECIFICATIONS -

Time Delay: 1-180 seconds

Heater Voltages: Up to 150 volts inter changeable on DC or AC of any frequency.

Heater Power: Approximately 4 watts

Contacts:

Arrangements:

SPST - Normally Open, N/C also.

Vibration: Will exhibit no resonance

through-

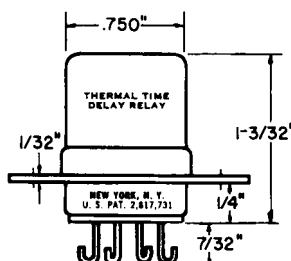
out range of 5-1000 CPS at 10 G's.

Shock: Will withstand shock upto 50 G's.

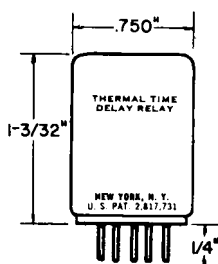
Weight: Less than 1 oz.

Terminals: Seven-pin miniature plug-in, or solder terminals for flange mount.

Hermetic Seal: Will withstand pressure equal to  $3.264 \times 10^{-1}$  in. Hg.

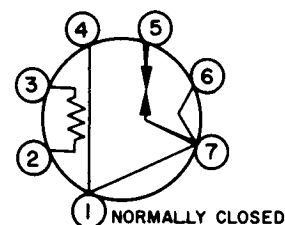
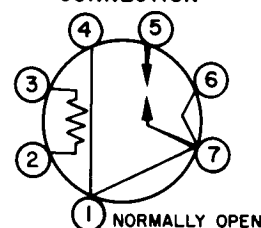


**TYPE "PR"**



### SCALE FULL

#### HEADER CONNECTION



NOTE: CAN BE HELD IN PLACE BY THE USE OF A STANDARD SEVEN-PIN MINIATURE TUBE SHIELD J-SLOT TYPE WITH SECURING SPRING.  
**DO NOT SECURE WITH CLAMPS.**

## ORDERING DATA

### EXAMPLE

**FR-10S-NO-28**

mounting  
style

time delay  
in seconds

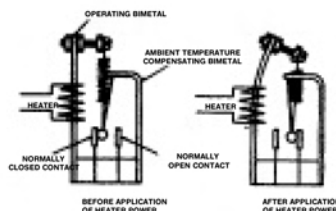
contact  
arrangement

heater  
voltage

## "snap action" THERMAL TIME DELAY RELAY

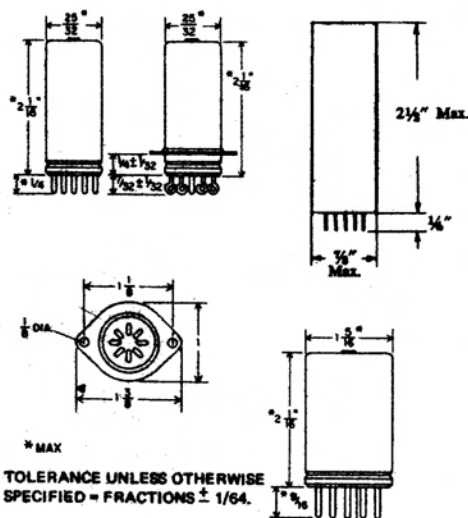
- LOW COST - HERMETICALLY SEALED - CHATTER FREE - FROM STOCK
- OPERATES ON ENERGIZATION - OPERATES AC OR DC ANY FREQUENCY
- UNAFFECTED BY VOLTAGE TRANSIENTS - AMBIENT COMPENSATED -65 +85°C
- TIME SETTING CAN BE PIN POINT ADJUSTED BY SCREW ADJUSTMENT

**DESCRIPTION:** New and critical applications of time delays are being filled by Thermal relays. Features include chatter-free, Single Pole Double Throw load contacts, fast reset, operates under conditions of temperature environments, vibration, shock, acceleration and altitude. The "Snapper" is a thermal time delay relay in which a bimetal element is heated by a separate controlling circuit to cause a mechanical deflection of the bimetal. A toggle Snap Action assembly is mechanically activated by the deflection.



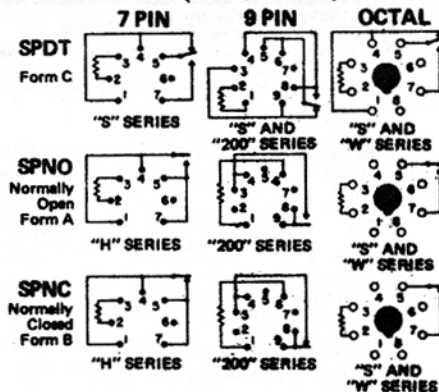
**OPERATION OF THE "SNAPPER" RELAY:** Snap Action switching has the inherent advantages of quick break and make, high contact pressure at the moment of closure, wiping action, and a large and definite contact gap. The movable contact arm of the relay is pivoted on a compensating bimetal element. Changes in the ambient temperature affect both the operating bimetal and the compensating bimetal, deflecting both so as to cancel the effect of ambient temperature on the relay operating time.

## DIMENSION DIAGRAMS



RELAY SPECIALTIES INC.

### BASING DIAGRAMS (BOTTOM VIEWS)



**OTHER BASINGS AVAILABLE UPON REQUEST**

# TIMERS & FLASHES

## *"snap action"* THERMAL TIME DELAY RELAY SERIES TYPE "S"

- 7 PIN MINIATURE HOOKED TERMINALS - 7 PIN SOLDER TERMINALS
- 9 PIN MINIATURE STRAIGHT TERMINALS - 8 PIN OCTAL PLUG IN

### 1. SPECIFICATIONS:

**GENERAL DESCRIPTIONS.** This relay is designed to meet all environmental conditions of aircraft, missile, computer and electronic equipment applications. All exterior connections are metal to metal or metal to glass and are finished to conform to applicable requirements. Inorganic materials are used internally.

**1.1 - Time Delay:** 3 to 120 seconds. 3, 4 and 5 second time delays for intermittent duty only. Relay to be de-energized at the completion of time delay interval.

#### **1.2 - Time Delay Tolerance:**

± 25% - 3, 4 and 5 second time delays +2 seconds  
± 15% available

**1.3 - Input Voltage:** Standard 6.3, 26.5 and 115 Volts - others 5 to 125 Volts upon request.

Frequency - AC or DC

Power - 2.5 to 3.9 watts on standard Relays.

**1.4 - Contact Resistance:** less than 0.1 ohms.

**1.5 - Ambient Temperature:** Compensated for ambient variations from 65°C to +125°C. For additional tolerance over the temperature range, contact factory.

#### **1.6 - Contacts:**

Type - S.P.D.T. Form 1A

Rating - S.P.D.T.

120 VAC-3 amps resistive

28 VDC-3 amps resistive

**1.7 - Relay Life:** In excess of 100,000 operations under average operating conditions.

**1.8 - Dielectric Strength:** Insulated for test voltage of 1000 volts peak between heater, contacts and shell, and 500 volts peak across open contacts.

**1.9 - Insulation Resistance:** 100 megohms minimum when checked with a DC potential of 100 volts.

#### **1.10 - Vibrations:**

S.P.D.T. - Will withstand vibrations over the frequency range of 5 to 55 cps with an amplitude of 0.03 inches (total excursion of 0.06 inches).

#### **1.11 - Shock:**

S.P.D.T. - Impact of 50g does not damage the relay.

**1.12 - Altitude:** Hermetically sealed Relay operates satisfactorily for altitudes to 70,000 feet.

### 2.. CONSTRUCTION:

**2.1 - Relays** are enclosed in metal envelope, hermetically sealed.

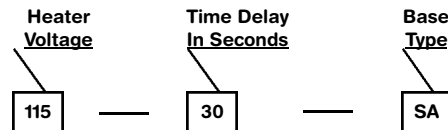
**2.2 - Finish:** Baked black enamel

**2.3 - Weight:** Less than 2 ounces

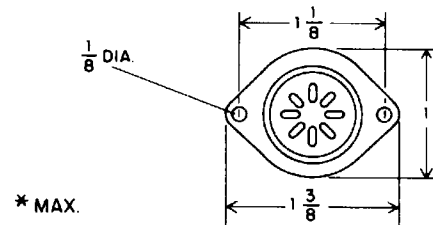
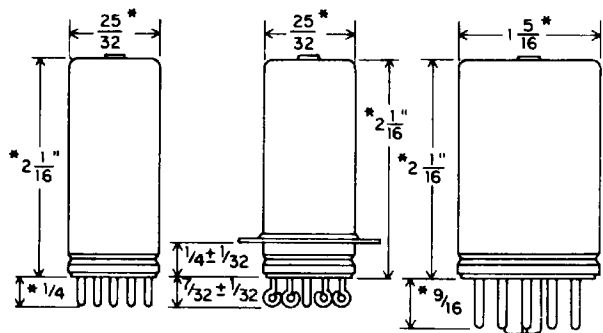
**2.4 - Manufacturers name and part number** are printed on the can.

### 3. ORDERING

The "S" series may be ordered in the following manner

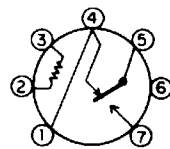


S = TYPE  
A = 7 PIN  
B = 8 PIN OCTAL  
C = 9 PIN  
D = 7 HOOK TERMINALS  
F = FLANGE MOUNTING

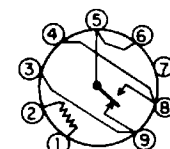


TOLERANCE UNLESS OTHERWISE SPECIFIED: FRACTIONS  $\pm \frac{1}{64}$

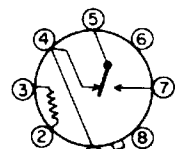
### BASE DIAGRAMS (BOTTOM VIEWS)



7 PIN MINIATURE  
AND 7 HOOKED  
SOLDER TERMINALS



9 PIN MINIATURE



8 PIN OCTAL