SYLVANIA

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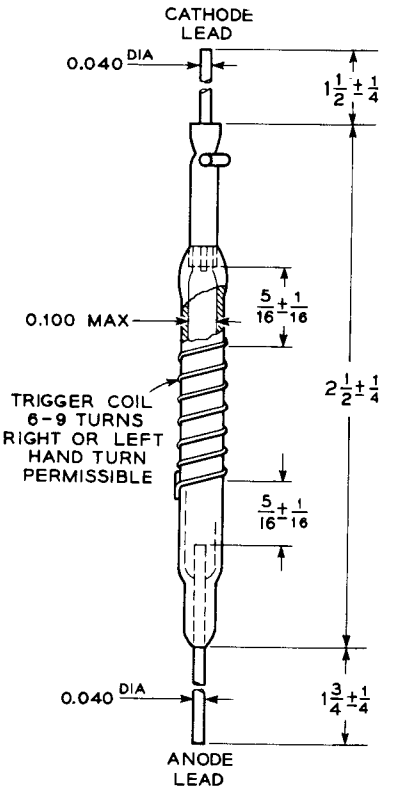
S413

DESCRIPTION: High Intensity Strobotron

Sylvania Strobotron Type S413 is a high-intensity strobotron which produces bluish-white light pulses at frequencies below 100 flashes per second. It was designed to fill the need for a reasonably priced, compact, slow-rate strobotron suitable for true-color viewing of relatively low-frequency rotary and reciprocatory motion. The stroboscopic effect of the repetitive, synchronized light flashes "freezes" the motion permitting either visual or photographic examination. Designed for triggering by an ignition coil discharge, the S413 is especially useful in automotive timing, spot viewing of ink flow and registry in multi-color printing, adjustment of packaging machinery, wheel balancing and similar applications. Careful control of the inside bore of the tube insures uniform production of tubes with a specified light output.



ELECTRICAL RATINGS

Dissipation ..... 3.5 watts max.

Tube dissipation in watts (w) may be determined by the formula $w\text{-}fCV^2/_2$

where C = discharge capacitance in microfarads (ufd)
V = Anode operating voltage in kilovolts (kv)
f = number of flashes per second

All maximum ratings specified below are applicable to the extent that the dissipation, as calculated by the formula above, does not exceed 3.5 watts.

Anode Operating Voltage
- Minimum ..... 425 Vdc
- Maximum ..... 750 Vdc

Trigger Voltage
- Minimum ..... 4 kv
- Maximum ..... 12 kv

Discharge Capacitance ..... 2 ufd max.
Frequency ..... 100 flashes/sec. max.

Typical Operation

Anode Voltage ..... 500 volts
Discharge Condenser ..... 1 ufd
Flashes Per Second 20
Trigger Voltage ..... 5 kv

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TYPICAL CIRCUITS

The circuits shown below are only two of many which may be used to operate the Sylvania S413. Appropriate circuits may be designed for many specific applications.

In designing circuits for tubes of this type, it is desirable that the time constant (RC) be as long as possible consistent with the desired maximum flash rate and operating voltage. Too short a time constant, at high repetition rates, may result in a continuous discharge due to insufficient deionization time.

In general, appropriate RC constants can be found to cover wide frequency ranges. However, extreme ranges may make it desirable to adjust the time constant at some intermediate point.

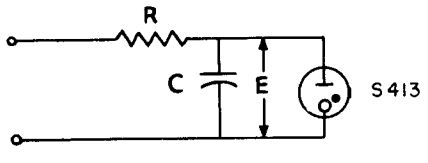
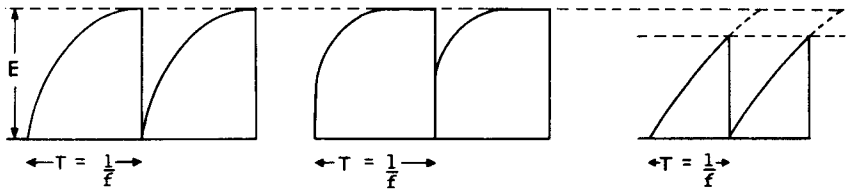


Figure 1
Basic RC circuit for use with Strobotron S413



(a) Correct Time Constant (b) Too Short Time Constant *(Tendency for continuous discharge)* (c) Too Long Time Constant *(Lowered operating voltage)*

Figure 2
Curves showing effect of proper and improper time constants.

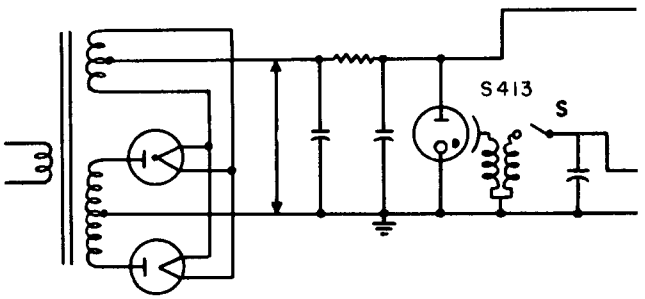
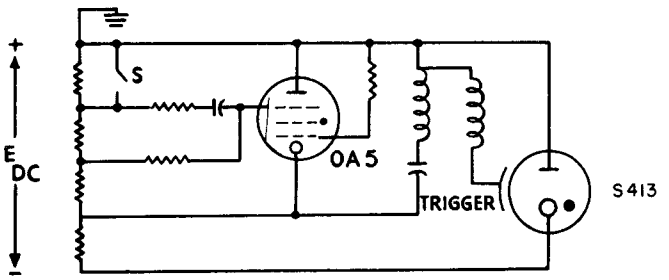


Figure 3
Basic Strobotron Triggering Circuit

Figure 4
Typical Strobotron Triggering Circuit Using Sylvania Type 045 Triggertube



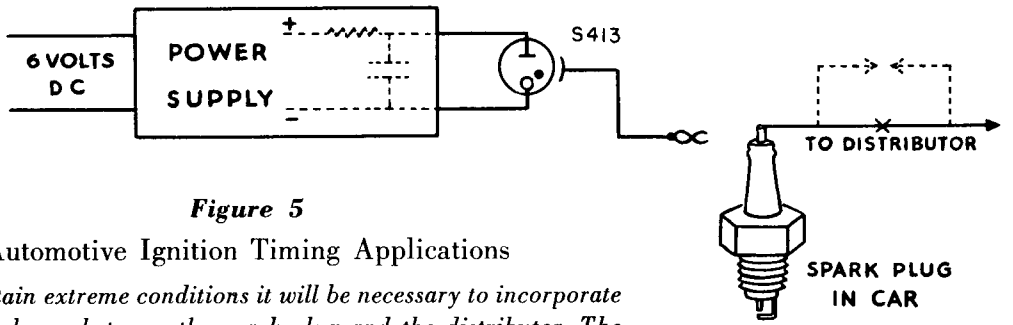


Figure 5
Automotive Ignition Timing Applications

(Under certain extreme conditions it will be necessary to incorporate an additional gap between the spark plug and the distributor. The trigger lead of the strobotron should then be connected to the side of the gap nearest the distributor.)