Signal Training Bulletin

COMMITTEE G: Education & Training
Communication & Signal Division, AAR

D-9 Block Signal Lighting Circuit

Approved June 1982

Definition: An electrical circuit designed to energize a signal lamp filament.

Symbol: None.

Description: A circuit designed to light a lamp in a signal unit to provide a visible indication of a signal aspect.

Purpose and Application: The purpose of a signal lighting circuit is to provide a visible means for a wayside signal to convey information to the engineer of an approaching train.

Signal lighting circuits may be applied to all types of signal systems.

General Information: There are many different applications of signal lighting circuits. Some are used to provide permanent lighting, advance lighting, back lighting, approach lighting, etc. The energy source for lighting circuits may be alternating current, direct current or a combination of both. It may be high voltage or low voltage, but is usually low voltage alternating current or direct current in the 8 to 12 volt range.

When using low voltage alternating current a means is usually provided to transfer the energy source to the signal batteries when the alternating current source is interrupted. Lighting circuits may be used with semaphore, searchlight, colorlight or color-position light signals.

The lighting circuits shown are not typical circuits, they are used for descriptive purposes for this training bulletin only.

Equipment, nomenclature, design and application should be in accordance with individual railroad requirements.

Detailed Operation: (Refer to Figure 1) In a permanent signal lighting circuit the positive energy source is applied directly to the lamp through a variable resistor to the negative energy source.

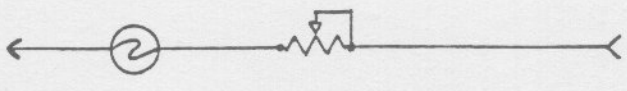

Figure 1 shows a permanent lighting circuit.

(Refer to Figure 2) When it is desired to energize the signal lamp only as needed during train operation, the positive energy source is connected to a normally open contact of a relay (L TR). This contact will close during the period of train operation and will apply positive energy through a variable resistor to the lamp, to negative energy source, completing the circuit and energizing the lamp.

Figure 2 is a lighting circuit using a lighting relay.

The variable resistor is used in signal lighting circuits to permit the adjustment of the lamp voltage to a specific value regardless of the distance from the energy source to the signal lamp.

The circuits shown in Figure 1 and Figure 2 are normally used for searchlight signals or for single colorlight signals.

Figure 3 shows a lighting circuit for a colorlight signal in an H and D signal system with a light relay to provide energy to the signal lamp as required.

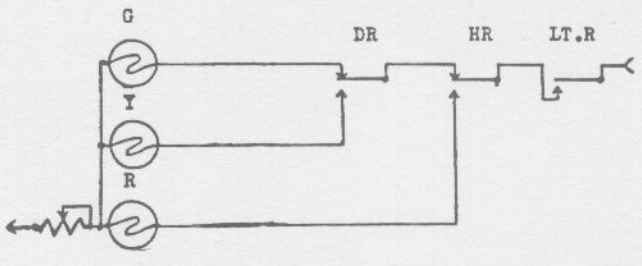

Figure 3 is a lighting circuit for a colorlight signal in and H (home) and D (distant) signal system using a lighting relay.

Figure 4 shows a lighting circuit for a color-position light signal in an H and D signal system using a lighting relay to provide energy to the signal lamp as required.

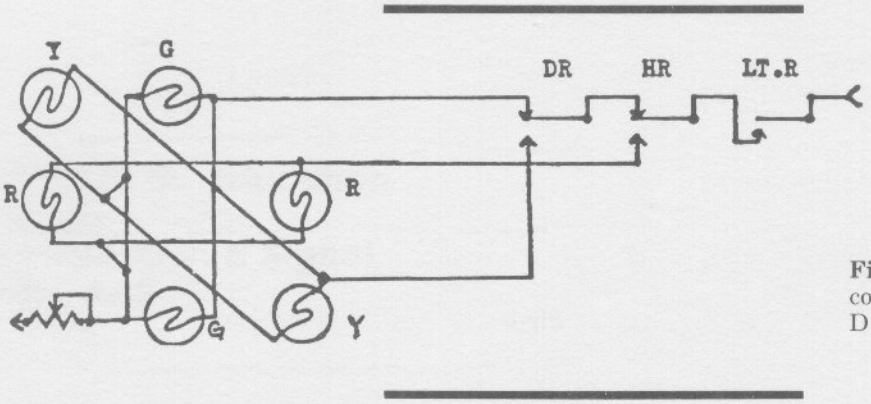

Figure 4 is a lighting circuit for a color-position light signal in an H and D signal system using a lighting relay.

Note: This Bulletin is for general information only. For specific applications consult the rules, standards and instructions published by your railroad.

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