

**Recommended Design Criteria and Functional/Operating Guidelines for a Color-Position-Light Signal**  
Revised 2023 (3 Pages)

**A. Purpose**

This Manual Part recommends design criteria and functional/operating guidelines for a color-position-light signal

**B. Additional Recommendations**

See Manual Part 7.5.1 Identical Items "Boilerplate" for all Manual Parts in Section 7, Sections C and D.

**C. High Signal**

1. High signal should be a combination of light units, the main group of which should have the units located on a 14 in (356 mm) radius and provide the required aspects.
2. Light units shall be mounted in such a manner as to provide the required aspect and be adjusted individually for proper alignment.

**D. High Signal Backgrounds**

1. Main group background should be not less than 40 in (1016 mm) in diameter. It should be designed to accommodate a maximum number of eight light units. Unused spaces shall be covered with a suitable plate which may be readily removed.
2. Background for auxiliary group shall be not less than 18-1/2 in (470 mm) in diameter.

**E. High Signal Light Units**

Light units shall be of such design and construction so as to avoid phantom aspects. Where a reflector is used, this may be accomplished by one or more of the following:

1. Provision of an inclined roundel.
2. Provision of a phankill device.
3. Provision of a conical outer lens.

4. Provision of a long hood and baffle.

**F. Terminal Box for High Signals**

1. Main group of light units should be provided with a weather-tight terminal box.
2. Wires from light units should be brought to terminals in the terminal box. Wiring diagram, if provided, should be located inside the terminal box.

**G. Dwarf Signal**

1. Dwarf signal should be provided with the appropriate number of lamp compartments.
2. Lamp compartments shall be separated by lightproof barriers.
3. Dwarf signal shall be so arranged as to provide the required aspect. Unused spaces shall be covered with a suitable plate which may be readily removed.
4. Terminals should be so located as to be easily accessible.

**H. Backgrounds and Hoods**

1. Hoods for high signals shall be not less than 8 in (203 mm) long.
2. Hoods for dwarf signals shall be not less than 5 in (127 mm) long.

**I. Lenses and Roundels**

1. Lenses for high signals should be of the doublet type, outer lens clear, 8-3/8 in (213 mm) in diameter; inner lens colored as required, 5-1/2 in (140 mm) in diameter. The focal length of lens combination to be 1/2 in (12.7 mm).
2. Lenses for dwarf signals should be of the doublet type, outer lens clear, 4 in (101.6 mm) in diameter; inner lens colored as required, 2-3/4 in (70 mm) in diameter. The focal length of lens combination to be 3/8 in (9.53 mm).

**J. Binding Posts**

1. Binding posts, nuts, and washers shall conform to Manual Part 14.1.11 Recommended Design Criteria for Binding Posts, Nuts & Washers, Details & Assemblies.
2. Binding posts shall conform to Manual Part 14.1.12 Recommended Design Criteria for Standard Binding Posts.
3. Binding posts shall be mounted so they cannot be turned in the base of frame to which applied. They shall be properly insulated from each other and other metallic parts.
4. Terminal Blocks and Connectors shall conform to Manual Part 14.1.2 Recommended Design Criteria and Functional/Operating Guidelines for Solderless Screw-Clamp or Screwless Cage-Clamp Terminal Blocks Used in Wiring Signal Apparatus with Copper Wire Only.

**K. Dielectric Requirements**

1. Lamp receptacle shall withstand for one minute an insulation test of 800 volts ac.
2. A surface leakage distance of not less than 1/4 in (6.35 mm) shall be provided between any exposed metallic part of the apparatus carrying current and any other metallic part hereof.

**L. Environmental**

See Manual Part 11.5.1 Recommended Environmental Requirements for Electrical and Electronic Railroad Signal System Equipment, Class B.

**M. Painting**

See Manual Part 7.5.1 Identical Items "Boilerplate" for all Manual Parts in Section 7, Section L.