Obstruction marking sphere is designed to warn aircraft pilots in daytime and nighttime which is compliant with International Civil Aviation Organization (ICAO) recommendations annex 14 chapter 6. Obstruction marking Sphere body is made of FRP, clamp is made of aluminum alloy or die-casting alloy, bolt, nut or washer are made of stainless steel 304. It can be seen away from 1250 m in air and 350 m in ground. It has single color or two colors, you can choose among them. It is light but durable, can resistant to water, UV, ozone, can be used for long time. It is usually used in overhead conductor, high-rise transmission lines, EHV (500,00 KV) transmission cables, communication wires, wires crossing river, lakes, fjords, valleys, roads, railways, construction sites and pipelines. It has different structure with warning sphere.

**Material:**
- **Sphere body:** FRP (Fiberglass Reinforced Polyester).
- **Clamp:** aluminum alloy or die-casting alloy.
- **Bolts, nuts or washers:** stainless steel 304.

**Visible distance:** 1250 m from the air and 350 m from the ground.

**Voltage range:** 35 KV - 1000 KV.

**Color:** single color (aviation red, aviation orange, aviation white), two colors (white/orange, white/red).

**Reflective strip:** with or not.

**Ambient temperature:** -40 °C to +90 °C.

**Drain hole diameter:** 10 mm, 12 mm.

**FRP material property:**
- Tensile strength > 128 MPa.
- Flexural strength > 230 MPa.
- Barcol hardness > 44.

**Clamp diameter:** 6.5-55 mm.

**Sphere diameter:** 600 mm, 800 mm, 1300 mm, also can be customized.

**Weight:** 6.9 kg, 9.0 kg, 15 kg.

**Thickness:** 2.2 mm - 3.0 mm.

**Drain hole diameter:** 10 mm, 12 mm.
Standard

- **FAA AC 70/7460-1L, obstruction Marking and Lighting.**
- Date Issued: December 04, 2015.
- Responsible Office: AJV-1, Airspace Service.
- Description: This Advisory Circular (AC) sets forth standards for marking and lighting obstructions that have been deemed to be a hazard to navigable airspace.

### Features of obstruction marking sphere

- Resistant to weather, high temperature, water, dust.
- UV, ozone, sunlight, attack resistance.
- Stable color, not fade, recyclable.
- Not make noise in windy day.
- Light but durable, properties do not change under complex environment.
- Clamp, bolt and nut can resistant to corrosion.
- Drain holes can prevent rain accumulating in the sphere.
- Stacking compatible design can save storage space and transportation cost.
- Optional preformed armor rods can decrease vibration and abrasion for the conductors.
- Reflective tape can ensure night visibility.
- Easy to install.
- Once installed, used for a long time.

Preformed armor rods should have the same direction with conductors.

Drain holes can prevent rain accumulating in marking sphere.
Application of obstruction marking sphere

- Used in overhead conductors, supporting towers, high-rise transmission lines, EHV (500,00 KV) transmission cables, communication wires to warn low flying airplanes and helicopters.
- Warning spheres are applied near airports and on elevated spans crossing river, lakes, fjords, valleys, roads, railways, construction sites and pipelines.
- Warning spheres are also applied near military bases, police stations, hospitals, helicopter routes and other low flying areas.

Packaging introduction of obstruction marking sphere

(ф 600 mm × 2.2 mm thickness as example)

- Number of packaging: 3 sets spheres/box.
- Inner packaging: double layers carbon box with bubble paper (outer dimensions) 610 × 610 × 900 mm, used for domestic transaction.
- Outer packaging: multi-layer wooden box (outer dimensions) 630 × 630 × 920 mm, usually for export products.

Also can be packaged at your request, below is the picture of 8 sets in a wooden box.

Installation

1. Take out the marking spheres from box. The half with insulated strips is lower hemisphere and the other is the upper one. Each box generally packs three sets of marking spheres. Match one complete set of the marking sphere with the same number (eg: Number “2”) printed on clamp.
2. Install preformed armor rods to conductor, make sure wrapping armor rods have the same direction with conductors.
3. Fix the lower hemisphere to the power line: tie up insulated strips on the power line, make sure the conductor with armor rods can right attach with clamp slots. Make sure the armor rods out of clamps on both sides with equal length which is about 20-30 cm.
4. Assemble the upper half with the lower half. In order to make sure groove and comb fit perfectly, please align clamp printed with the same number (eg: Number “2”) on one side of each half.
5. Insert hex bolts, hex nuts, flat washers, spring washers into cable clamps on both sides.
6. Use suitable adjustable wrench to fix hex nuts.
**Obstruction marking spheres installation note**

- The spacing between two consecutive marking spheres or between a marking sphere and a supporting tower should be appropriate to the diameter of the marking sphere.

- The maximum spacing is 30 m with sphere's diameter is 600 mm.

- The maximum spacing is 35 m with sphere's diameter is 800 mm.

- The maximum spacing is 45 m with sphere's diameter is 1300 mm.

- If multiple wires or cables are involved, marking sphere should be located in the highest wire.

- When installed, different colors' marking spheres should be displayed alternately. The color selected should contrast with the background to ensure marking spheres will be seen clearly.

- Obstruction marking spheres should alternate aviation orange, white, yellow, with aviation orange markers positioned at each end.

- If less than four markers are on the line, all markers should be aviation orange.