APPROVED BEACONS FOR ROAD TRAFFIC

SIRENA

All those who operate work vehicles are responsible, according to their skills, for the safety of other people and vehicles. Using the most appropriate rotating or flashing light can greatly increase visibility and safety of the vehicle.

Every country has a specific regulation code, but they're all very similar regarding the mandatory use of beacons to signal the presence on the road. In the italian Codice della Strada, for instance, there are several categories of vehicles for which the use of flashing beacons (amber in color) turned on while driving on public roads is mandatory.

Such vehicles are:

- exceptional vehicles or vehicles for transportation under exceptional conditions;
- vehicles used for the collection of municipal solid waste, street cleaning and road maintenance;
- vehicles used in technical service;
- work vehicles;
- vehicles used for removal or rescue;
- agricultural or operating machinery.

For all categories of vehicles on which there is an obligation to use, such luminous devices must be approved, under penalty of fines.

Which rotating and flashing beacons are therefore approved for use on roads?

A beacon is approved, and can therefore be used on roads open to traffic, only if it complies with UNECE Regulation No. 65 - Uniform provisions concerning the approval of special warning lamps for power-driven vehicles and their trailers - and UNECE Regulation No. 10 - Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility.

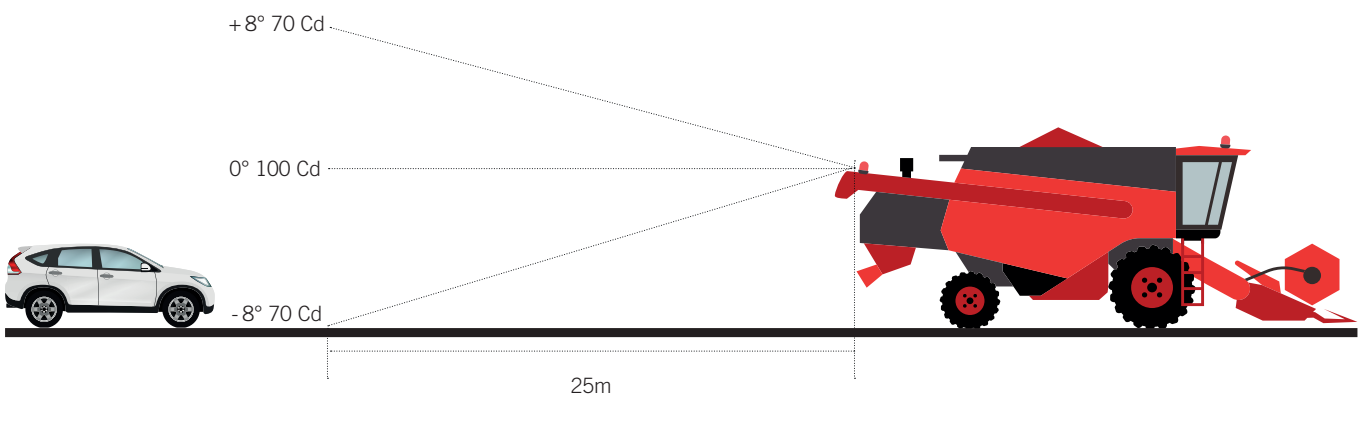
UNECE Regulation No. 65 (www.unece.org) establishes certain specifications that special signaling devices, in order to be approved, must have: general specifications (resistance to vibration and water, frequency of switching on and off, operating temperature range, protection against improper handling...), photometric specifications (minimum and maximum values of effective luminous intensity), colorimetric characteristics of the light emitted through the filter (amber color for these vehicles) expressed in chromatic coordinates, instructions concerning fixing, etc.

In summary, in accordance with UNECE Regulation No. 65, flashing and rotating lights must be designed in such a way that during normal use and with associated vibration they ensure perfect operation in terms of light distribution, color and intensity.

The effective luminous intensity (Je) of beacons (category T) is a decisive value for compliance with the regulations, as it is particularly important for being seen in traffic. For amber-colored devices in Class 1 (one level of luminous intensity/ night), values complying with this Regulation, measured in Candela (Cd) at a distance of at least 25m, must be:

- **Cd(eff) – Minimum value 0°: ≥100**
- **Cd(eff) – Minimum value 0°: ≤700**
- **Cd(eff) – Minimum value +8°: ≥70**
- **Cd(eff) – Minimum value -8°: ≥70**

Effective light intensity according to UNECE No. 65: correct positioning



The flashing or rotating beacon must be installed on the vehicle so that the visual warning is recognizable from every location within a radius of at least 25 m. If this is not possible, e.g., in cases where the arrangement of the load or the presence of special equipment obstruct the view of the flashing light, additional signalling systems (e.g., other beacons) will have to be mounted on the vehicle. In addition, if the optical center is at a lower height than the position lights, it will be necessary to use a stand for the beacon instead of placing it on the roof of the tractor.

Effective light intensity according to UNECE No. 65: correct positioning

Use a stand for the beacon to ensure its perfect positioning: the optical center of the beacon should be at least two meters from the ground and never lower than the position markers.

Talking about the installation, the beacon must be positioned in a way that it does not need to be adjusted once installed. The structure must be designed to meet ISO 4148, type A (adapter socket), B1 (flat base), B2 (flat base) or C (single M12 bolt fastening). Lighting devices must continue to function perfectly in normal use, despite the occurrence of vibrations, and ensure brightness values that meet the minimum and maximum requirements even in prolonged use: for this reason, the use of LED lights, for which there is optimal heat management, is always recommended.

UNECE Regulation No. 10 applies to all vehicles, their components, and electrical/electronic units installed in the vehicle (mechanically attached to the vehicle and not removable without tools, or permanently/temporarily connected to the vehicle wiring system) with regard to electromagnetic compatibility.

Electromagnetic compatibility means the ability of vehicles, components or individual electrical/electronic units to function in their electromagnetic environment satisfactorily (immunity), without introducing unacceptable environment electromagnetic disturbances

Electromagnetic compatibility according to UNECE No. 10: emission and immunity

Electromagnetic compatibility: ability to operate in its electromagnetic environment satisfactorily (**immunity**), without introducing unacceptable electromagnetic disturbances into that environment (**emission**).

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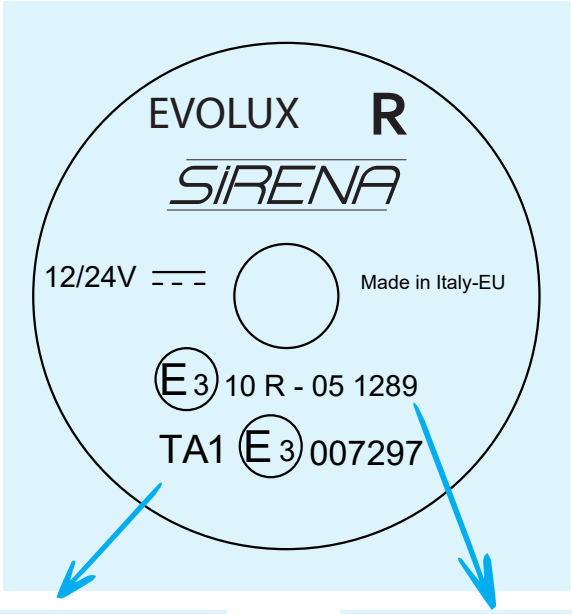
All beacons manufactured by Sirena S.p.A. comply with UNECE Regulation No. 65 and the requirements of UNECE Regulation No. 10 and thus have the required approval numbers:

Example of approval marking according to UNECE No. 65 and UNECE No. 10



Approval UNECE No. 65

Approval UNECE No. 10

Approval UNECE No. 65

This marking indicates that the special signaling device has been approved in Italy (E3) in accordance with Regulation No. 65 under approval number 007297. It is a rotating or flashing light (emitting intermittent light all around its vertical axis) T, amber A color, in class 1 (one level of intensity/night).

UNECE Approval No. 10

The marking indicates that the light fixture has been approved with regard to electromagnetic compatibility in Italy (E3) in accordance with Regulation No. 10 under approval number 05 1289 (according to Amendment 05).