

WHAT IS THE DIFFERENCE BETWEEN RED LIGHT, YELLOW LIGHT, AND BLUE LIGHT ON THE CARS OF VIP AND HIGH-RANK OFFICERS?

Emergency vehicle lighting is one or more visual warning lights fitted to a vehicle for use when the driver wishes to convey to other road users the urgency of their journey, to provide additional warning of a hazard when stationary, or in the case of law enforcement as a means of signaling another driver to stop for interaction with an officer. These lights may be dedicated emergency lights, such as a beacon or a light bar, or may be modified stock lighting, such as a wig-wag or hide-away light, and are additional to any standard lighting on the car such as hazard lights. Often, they are used along with a siren (or occasionally sirens) in order to increase their effectiveness. In many jurisdictions, the use of these lights may afford the user specific legal powers, and may place requirements on other road users to behave differently, such as compelling them to pull to the side of the road and yield right of way so the emergency vehicle may proceed through unimpeded.

Laws regarding and restricting the use of these lights vary widely among jurisdictions, and in some areas non-emergency vehicles (e.g. school buses) and semi-emergency vehicles (e.g. tow trucks) may be permitted to use similar lights. These non-and semi-emergency lights are also discussed here. Research into the usefulness and potential dangers of these lights is also presented.

Red Light With Flasher :

- President
- Vice President
- Chief Justice of India
- Prime Minister
- Deputy Prime Minister
- Justices of Supreme Court
- Chief Justices of High Court
- Speaker of the Lok Sabha
- Cabinet Minister of the Union
- Deputy Chairman, Planning Commission
- Governors of the State within and outside their respective States.
- Supreme Court Judges, High Court Judges, District Judges and Session Judges

Red Light Without Flasher :

- Leader of Opposition Party in Rajya Sabha & Lok Sabha President.
- Chief Election Commissioner.
- Comptroller & Auditor General of India.
- Deputy Chairman Rajya Sabha.
- Deputy Speaker, Lok Sabha
- Minister of the State of the Union.
- Members of the Planning Commission
- Members of the Minorities Commission.
- Attorney General of India.
- Cabinet Secretary.
- Chief of the Staff of three Services holding the rank of full General or Equivalent Ranks.
- Chairman, Central Administrative Tribunal.
- Officiating Chief of the Staff of the Three Services holding the Rank of Lt. General or Equivalent.
- Chairman, Central Administrative Tribunal
- Chairman, Minorities Commission
- Principal Chief Commissioner of Income Tax
- Chairman Scheduled Caste & Scheduled Tribe Commission

- Chairman Union Public Service Commission.
- Solicitor General of India.

Blue/ Amber Lights:

- Police
- Ambulances
- Commissioner of Income Tax.
- Home Secretary
- Police Commissioner

According to the rule the Governors of the state are assigned a red beacon with flasher, if he/she is not travelling in the car, then beacon should be covered with a black cloth. This is the rule to all the vehicle with beacons on them.



Emergency vehicle lighting, such as that seen on this 1970s ambulance, helps to announce the vehicle's presence to other road users

Purpose

Emergency vehicle lighting is generally used to clear the right of way for emergency vehicles, or to warn approaching motorists of potential hazards, such as a vehicle that is stopped or moving slower than the rate of traffic, or a car that has been pulled over. It may also be used to provide specific directions to motorists, such as a command to pull over. Some vehicles incorporate a small arrow board to direct traffic.

The use of emergency beacons is restricted by law in many jurisdictions only for responding to an emergency, initiating a traffic stop, bona fide training exercises, or when a specific hazard exists in the road. Most private security agencies have special permits that allow them to use beacons in specific areas. It has yet to be determined whether autonomous vehicles will be required to carry lights, or what colours or patterns they might exhibit to warn off aggressive human drivers.

Optical types

The optical and mechanical characteristics of the lights used can have a significant effect on the look of the vehicle and how readily it gains attention in emergencies.

Steady Burning

The simplest form of lighting is a steadily burning lamp. These may be white lights used on scene to enable emergency workers to see what they are doing, or they may be colored lights that advertise the emergency vehicle's presence. In the latter case, steadily burning lights are often used alongside rotating or flashing lights rather than on their own, though historically some emergency vehicles only displayed steadily burning lights.

Rotating Light

These revolving lights may contain a single, stationary bulb around which a curved mirror is spun (or which is attached to a spinning mirror), or a lamp with a Fresnel lens. This creates rotating beam(s) of light, appearing to flash when viewed. Larger rotating lights may contain modular or sealed-beam lamps which rotate as an assembly (commonly 2 or 4 bulbs, but possibly 1 or 3).

To protect the workings of the beacon, a plastic dome often covers the assembly. These domes usually come in solid colours, but in some cases the front and back halves of the dome are different colors. Other beacons use a clear dome with coloured lenses on each lamp. Especially in the last case, these rotating beacons are sometimes referred to colloquially as 'gumball machines' or sometimes 'cherry tops' in the case of red lights.

Rotating lights often use a quartz-halogen or conventional incandescent bulb, though some rotating beacons are now made with LEDs rather than bulbs

Rotating lights may be used in lightbars as well as in single beacons. In a modern enclosed lightbar, generally 'V'- or diamond-shaped mirrors are provided between the lamps to give the effect of multiple flashing lights.

Strobe Lights

Some emergency lighting is based on strobe lights similar to those used in flash photography. These xenon flash lamps put out a very brief but very bright flash by discharging a large current through a gas which ionizes the gas. The light produced has a somewhat bluish emission spectrum, which makes red lightbars glow a fuchsia-pink color when lit.

Strobe Lighting did provide intense light which could improve visibility, however the short duration of the individual flash made it necessary to design the electronics to issue multiple consecutive flashes before alternating with the other associated lens pair. This purportedly allowed time for the human eye and mind to key in and observe the source of the light. Since the changeover to L.E.D. lighting units, which could easily allow for longer duration illumination time, they have instead chosen to mimic what is actually a shortcoming of the strobe light, and design the L.E.D. light head to illuminate with multiple short duration flashes. It has been noted that depending on the surrounding lighting conditions and other vehicle lighting, strobe only warning lighting did not allow for the same level of perception of distance from the source that traditional light bar and incandescent flashing lights would provide, especially on dark highways and similar locations.

Led Lighting



The lightbars mounted on the cars are LED-based. The illuminated back-up lamps seen in the two cars in the foreground are being used as emergency lights which operate on a different circuit, rather than burning steadily to indicate that the cars are in reverse gear

LED-based lighting is becoming very popular in the emergency services for several reasons. Light-emitting diodes are small, completely solid state, very power-efficient, long-lasting (as they have no filaments to burn out) and can be seen very easily even at great distances and in sunlight.

Whether as lightbars or single beacons, LED-based lights typically use a clear, colourless dome because the light colour is an intrinsic property of the LEDs themselves. LED-based lightbars can be made very thin, reducing wind resistance by around 8-10 percent, or made very flat and used in novel applications, for example to flip up under a sun visor.

LED lights are often used in a mode similar to conventional strobe lights, however they can be programmed with a wider variety of flash patterns because of their ability to be switched directly by electronics, as opposed to discharging a capacitor through a gas-filled tube.

LED lights produce relatively little heat when in use. In colder inclement climates, this has resulted in LED emergency vehicle warning lights (as well as traffic lights) being obscured by the build-up of frost or snow, raising safety concerns. Solutions are being researched to provide a heat source, as necessary in certain weather conditions, to keep LED lights clear of snow and frost.

Information matrix signs

Some emergency vehicles use signs made up of a large number of light sources (usually LEDs), which can be programmed to display messages to other road users. This can be used to request other vehicles to pull over, indicate a special instruction, or just to display the name of the operating service (e.g. 'Police').

Mounting types



Diagram showing potential mounting positions for internal, body mounted and removable beacons on emergency vehicles

Emergency lighting may be fitted to several places on a vehicle, depending on the hazard/ danger. Beacons and lightbars are often mounted on the roof for high visibility, while other lights may be mounted on the body, in the grill, or in the interior of the vehicle.

Roof-mounted single beacon, Lightbar, Body mounted Interior mounted



Scientific research

Perception

A study at showed that strobe lighting conveyed a greater sense of urgency to other road users, with the faster the flash the greater urgency, potentially helping to speed the emergency vehicle through traffic. It also concluded that factors such as flash pattern were important, with simultaneously flashing beacons attracting attention far quicker than alternately flashing versions, although this did increase discomfort glare. In general, as light intensity and the number of beacons present increased, the time it took to gain the attention of other drivers decreased.

This same study compared different light colours for glare and detection time under both daylight and night conditions. While red and blue both compared favourably with amber for glare under various conditions, some contradictory findings were observed for detection time. When all colours were held at equal intensity, amber had the poorest detection time both daytime and night. However, when the light source was held at constant intensity, the amber filters, which generally let the most light through, had the best detection time.

Potential Hazards

There may be a number of hazards to other road users related to the use of emergency beacons, and these effects should be mitigated as far as possible during vehicle design. These potential hazards include:

- Photosensitive Epilepsy - This is an epileptic reaction to flashing lights in susceptible persons, which can range in severity from an unusual feeling or involuntary twitch to a generalized seizure. This epileptogenic response can be triggered by lights flashing in the frequency range of 10–20 Hz, regardless of colour. While individual light sources used on emergency vehicles generally have much lower flash rates than this, the Loughborough study suggests that such possibilities be minimized. It also notes that emergency workers may report distraction and eyestrain unrelated to epilepsy from working under the lights.
- Glare - A bright light source in a person's field of view can reduce their ability to see other objects. The effect may be exacerbated by rain, windshields, or eyeglasses. The study distinguished between 'disability glare', where a driver may be temporarily blinded and unable to see hazards in the road, versus 'discomfort glare', which is a more general effect from lights which may cause motorists to avert their eyes. The worst effects for disability glare occurred with amber beacons, strobe beacons, and especially bright lights.
- Phototaxis - This is the so-called 'moth-to-flame' effect, where the hypothesis runs that some drivers may be so distracted by the beacons that they are 'drawn' to them.

Reference:

- 1) *Vehicle beacon lights in India*
- 2) *Page on delhi.gov.in*
- 3) *Quora.com*
- 4) *Wikipedia*

!!! If you have any requirements for.....

- **Personal Protection, Fire & Safety Protection.**
- **Crisis & Disaster Management.**
- **Smoke & Gas Detection.**
- **Supply, Installation, AMC, (Portable & Fixed Fighting equipment and accessories)**
- **Advisory, Consulting, SoP Formulation & Documentation.**
- **Training & Refresher Courses.**
- **Fire Audits.**

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