

WAC 204-21-040

Headlamps.

Headlamps must be mounted as specified in FMVSS 108, chapter [46.37](#) RCW, and as follows:

(1) On motor vehicles:

(a) If installed after November 15, 1975, the headlamps must not be closer than twelve inches to the centerline of the vehicle. This distance must be measured from the center of the lens. Except motorcycles, motor-driven cycles, and motorized bicycles must have the headlamps spaced as far apart as practicable.

(b) Adjusting and aiming of headlamps:

(i) If the headlamp is a Type 1 sealed beam headlamp unit (including those with any suffix letters and numbers such as 1A and 1C1) the lamp must be aimed with the center of the high intensity zone on the vertical line straight ahead of the lamp center and at the level of the lamp center.

(ii) If the headlamp is a Type 2 sealed beam headlamp unit (including those with any suffix letters and numbers such as 2A1 and 2B) the lamp must be aimed with the left edge of the high intensity zone on the vertical line straight ahead of the lamp center and with the top edge of the high intensity zone at the level of the lamp center.

(iii) If the headlamp is quartz halogen nonsealed beam meeting the requirements of the Canadian Standards Association: The high beam lamp must be aimed as specified for Type 1 headlamps in (b)(i) of this subsection; the low beam lamps must be aimed so that the top edge of the low beam cutoff is three inches below the level of the lamp center, and the point which the cutoff rises to the right must be on the vertical line with the center of the lamp.

(c) In cases of customized headlamp installation, headlamps must not be mounted closer together than requirements outlined for the year or original manufacture of the vehicle body.

(2) On motorcycles or motor-driven cycles with multiple beam lamps, the lamps must be aimed on the upper beam as specified for Type 1 units in subsection (1)(b)(i) of this section. As an alternative, motorcycle headlamps or motor-driven cycles with multiple beam headlamps with a well-defined lower beam may be aimed on the lower beam as specified for Type 2 units in subsection (1)(b)(ii) of this section with the vehicle upright and the front wheel facing straight ahead.

(3) On motor-driven cycles with single beam headlamps, the lamps must be aimed with the center of the high intensity zone on a vertical centerline straight ahead of the lamp center and with the top edge of the high intensity zone at the level of the lamp center.

(4) On motorcycles and motor-driven cycles with electronic headlamp modulators.

(a) The headlamp modular must:

(i) Be inserted in the high beam headlight circuit on motorcycles between the high beam hand switch and high beam filament in the lamp.

(ii) Be located on a frame bar or other substantial structure number, easily accessible to the operator for quick access to a bypass switch. The device should be air cooled, if necessary.

(iii) Be designed to continuously operate 60 watt headlamps.

(iv) Have an electrical bypass switch rated at 6 amps, 12.8 volts.

(v) Be made to change modulation amplitude:

(A) Daytime - modulation depth should be at least 50% but not more than 80%.

(B) Nighttime - not more than 20% modulation.

(C) At no time while the light modulator is being used should the percent modulation become 100%. This condition switches off the light intermittently and leads to premature filament failure.

(vi) Have No. 16 AWG stranded copper interconnecting wire.

(vii) Not make changes that would render ineffective any portion of 49 C.F.R. Part 571.108 (FMVSS 108).

(b) The headlamp modular should:

(i) Not use potentially dangerous voltages, i.e., above 50 volts, in the light modulator.

(ii) Operate within a frequency band of one cycle every two seconds to not more than four times per second.

(iii) Be sealed to prevent water intrusion.

(iv) Be designed to withstand intense vibration at 130°F.

(v) Be capable of operating over a voltage range of from 8 to 14 volts with no discernible change in its operating characteristics other than in headlamp brightness.

(vi) Not alter the low beam headlight circuit so that it may be used as backup in case of modulator malfunction.

[Statutory Authority: RCW [46.37.005](#) and [46.37.320](#). WSR 08-19-104, § 204-21-040, filed 9/17/08, effective 10/18/08.]

49 CFR 571.108 - Standard No. 108; Lamps, reflective devices, and associated equipment.

S7.9.4 Motorcycle headlamp modulation system.

S7.9.4.1 A headlamp on a motorcycle may be wired to modulate either the upper beam or the lower beam from its maximum intensity to a lesser intensity, provided that:

- (a) The rate of modulation shall be 240 ± 40 cycles per minute.
- (b) The headlamp shall be operated at maximum power for 50 to 70 percent of each cycle.
- (c) The lowest intensity at any test point shall be not less than 17 percent of the maximum intensity measured at the same point.
- (d) The modulator switch shall be wired in the power lead of the beam filament being modulated and not in the ground side of the circuit.
- (e) Means shall be provided so that both the lower beam and upper beam remain operable in the event of a modulator failure.
- (f) The system shall include a sensor mounted with the axis of its sensing element perpendicular to a horizontal plane. Headlamp modulation shall cease whenever the level of light emitted by a tungsten filament light operating at 3000° Kelvin is either less than 270 lux (25 foot-candles) of direct light for upward pointing sensors or less than 60 lux (5.6 foot-candles) of reflected light for downward pointing sensors. The light is measured by a silicon cell type light meter that is located at the sensor and pointing in the same direction as the sensor. A Kodak Gray Card (Kodak R-27) is placed at ground level to simulate the road surface in testing downward pointing sensors.
- (g) When tested in accordance with the test profile shown in Figure 9, the voltage drop across the modulator when the lamp is on at all test conditions for 12 volt systems and 6 volt systems shall not be greater than .45 volt. The modulator shall meet all the provisions of the standard after completion of the test profile shown in Figure 9.
- (h) Means shall be provided so that both the lower and upper beam function at design voltage when the headlamp control switch is in either the lower or upper beam position when the modulator is off.

S7.9.4.2

- (a) Each motorcycle headlamp modulator not intended as original equipment, or its container, shall be labeled with the maximum wattage, and the minimum wattage appropriate for its use. Additionally, each such modulator shall comply with S7.9.4.1 (a) through (g) when connected to a headlamp of the maximum rated power and a headlamp of the minimum rated power, and shall provide means so that the modulated beam functions at design voltage when the modulator is off.
- (b) Instructions, with a diagram, shall be provided for mounting the light sensor including location on the motorcycle, distance above the road surface, and orientation with respect to the light.