

NORTH CAROLINA HIGHWAY PATROL
INVESTIGATIVE SERVICES UNIT



Wall Chart Aiming Area
Requirements

ABSTRACT

Guidelines for wall chart aiming requirements for automobiles and motorcycles.

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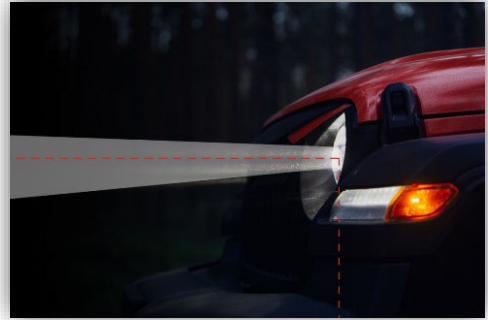
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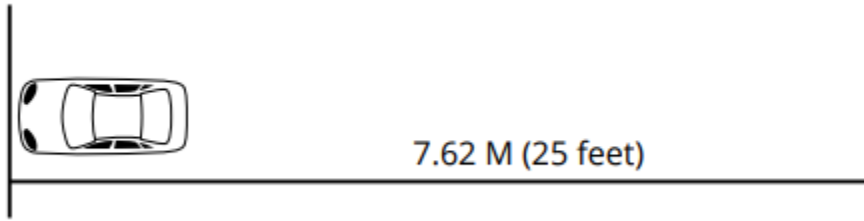
Requirements for Headlight Adjustment

- Darkened Area – Shaded from any additional lighting.
- Flat Floor Surface.
- Aiming Screen – 5 Feet High x 12 Feet Wide - Matte White Surface – White.
- Aiming Wall (When not using a screen) – 6 Feet High x 12 feet Wide – White, washable, non-gloss white.
- Aiming Screen/Wall must be 25 feet from Headlights when testing. Entire vehicle is required to be inside the inspection area.
- Vehicle must be able to be centered to the screen (left or right) through vehicle adjustment or screen adjusted.
- Permanent 25 Foot Reference Line on Floor indicating distance from headlights to aiming screen/wall.
- Wall marking equipment – Marker or Tape.

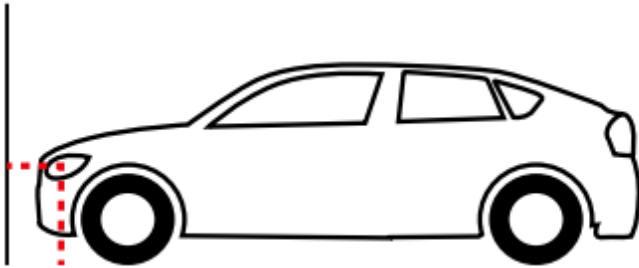


Aiming Guidelines for Automobiles:

1. Park the vehicle close to a wall, in an area where there is at least 7.62 meters (25 feet) of space behind it, excluding the car length.



2. On the wall, draw a vertical line from the ground to the approximate center point of the headlight. Repeat for the other headlight. This will create your Y axis lines.



3. Connect the center points between headlights in a horizontal straight line, using chalk or tape. This will create your X axis line.

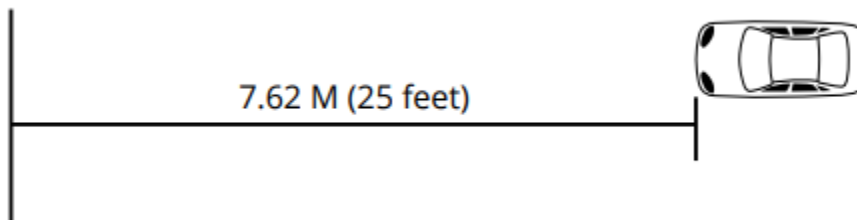
NOTE: Use a straight edge and a level to make sure this line is straight.



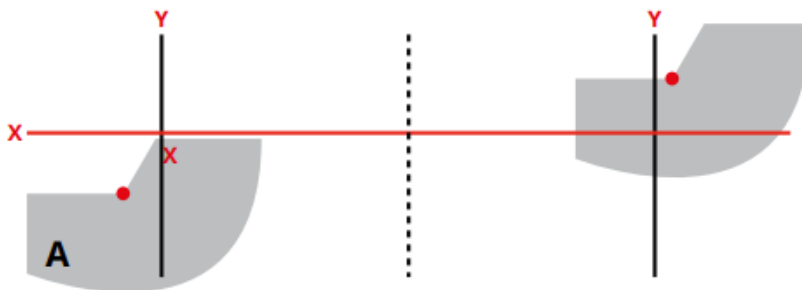
4. Extend the vertical lines, (Y axis) lines up approximately 3 feet. The lines should match the diagram below when looking at the lines straight on.



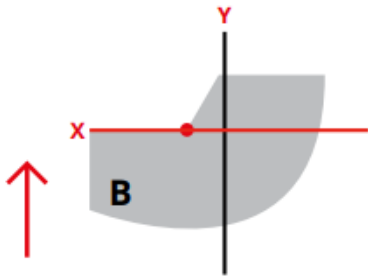
5. Reverse the vehicle in a straight line so that the front of the headlights are 7.62 meters (25 feet) back from the wall



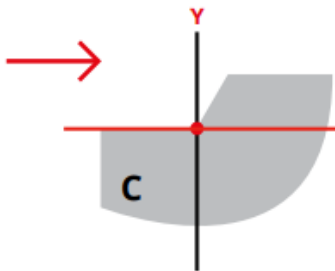
6. When the headlights are turned on, ensure the lights are in the LOW BEAM position. The alignment points of the LOW BEAM may be positioned differently than shown and may be aimed differently from each other.



7. Using the alignment mechanisms in your vehicle, adjust one headlight vertically until the alignment point is even with the X axis



8. On the same headlight, adjust horizontally until the alignment point is even with the Y axis.



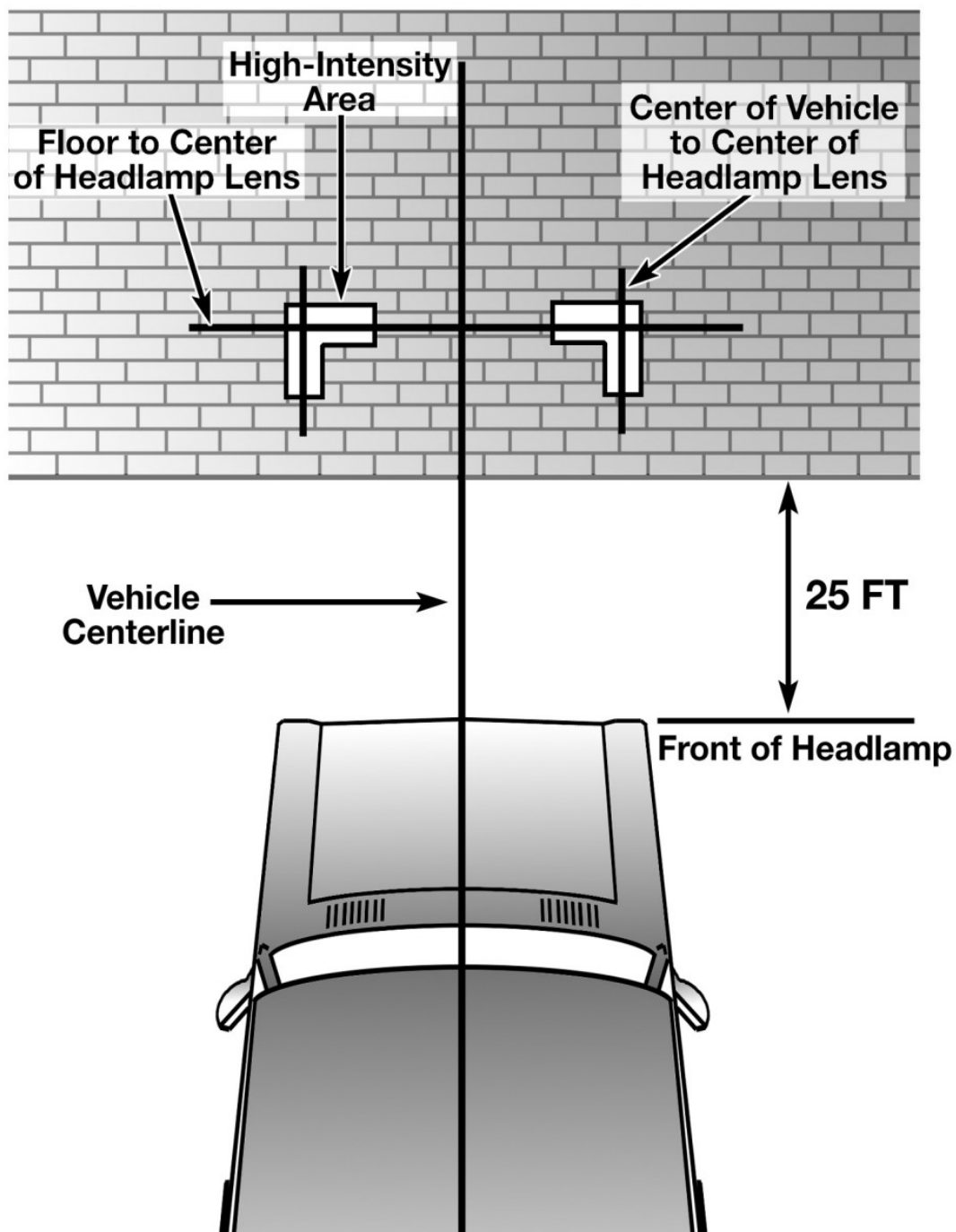
9. Repeat this process on the other headlight. Both headlights should match the diagram below, where the alignment point is even with the point where the X and Y axis cross.



10. Headlamp Aiming Criteria: at the correct distance (25 feet), a reject would occur if the brightest portion of the beam is more than 4 inches to the right or left of the vertical center line or more than 4 inches above or below the horizontal center line.

Remember, the vehicle must be positioned properly on a flat and level surface in front of a wall or screen.

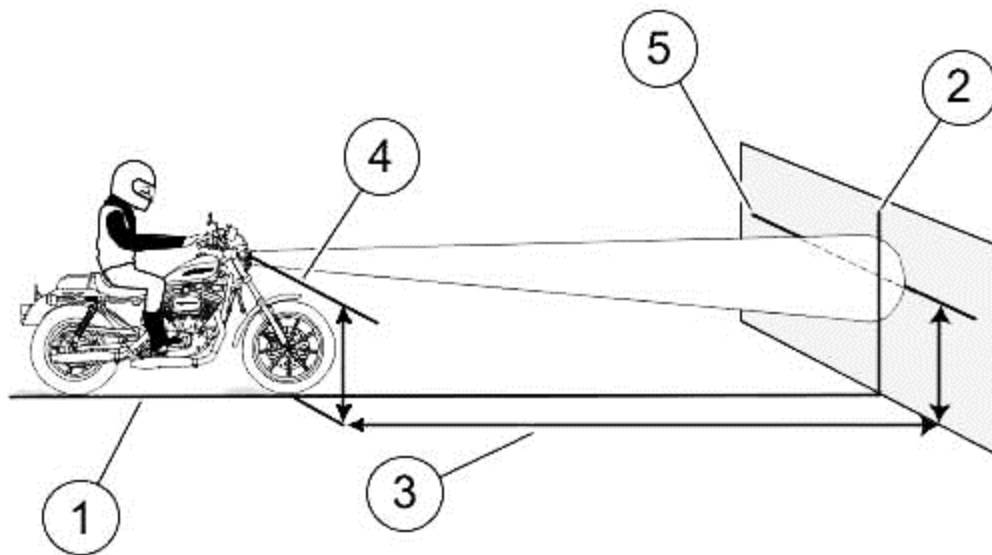
Visual Guidelines for Aiming Requirements for Automobiles



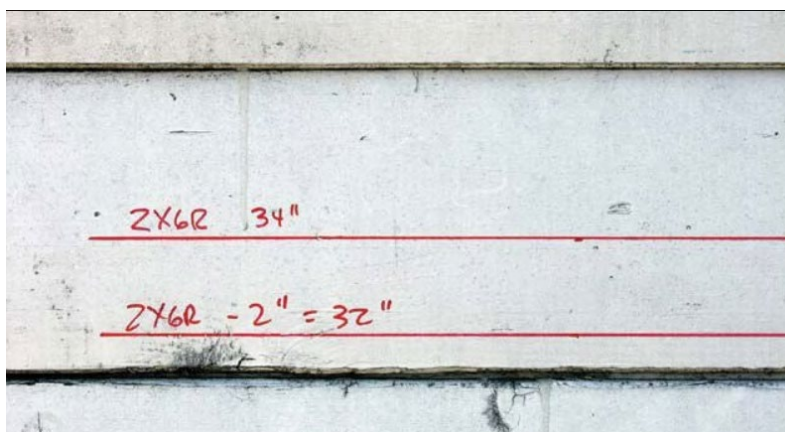
Aiming Guidelines for Motorcycles:

Note: Before adjusting headlights, ensure that the tires are properly inflated, and the motorcycle is at normal riding height.

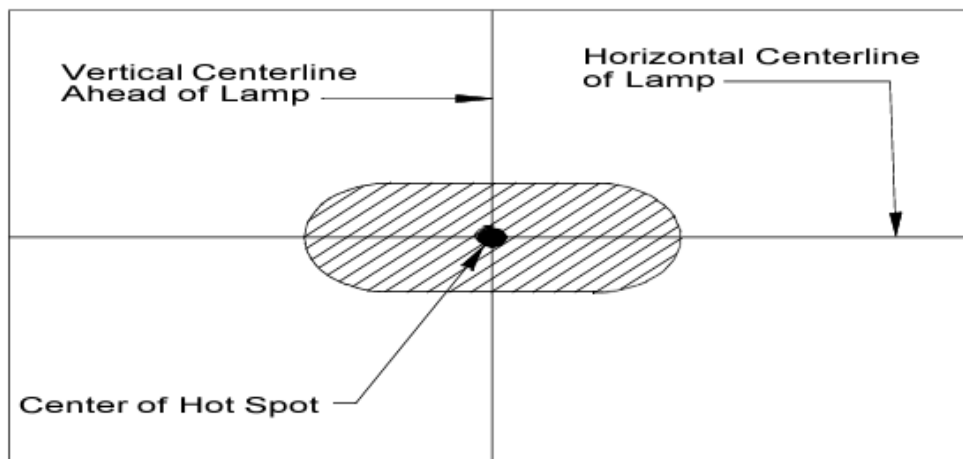
1. Park the motorcycle perpendicular to the wall or screen that will be used to verify headlight aim.
2. On the screen or wall, draw a vertical line from the ground through the approximate center point of the headlight.
3. Position motorcycle 25 feet (7.62m) away from a screen or wall, which is determined by measuring the distance directly below the front axle to the base of the screen or wall.
4. Stand motorcycle upright with both tires resting on a level floor and with the front wheel pointing directly forward towards the screen or wall. Load motorcycle with rider, passenger (if normally present) and any other cargo normally carried.



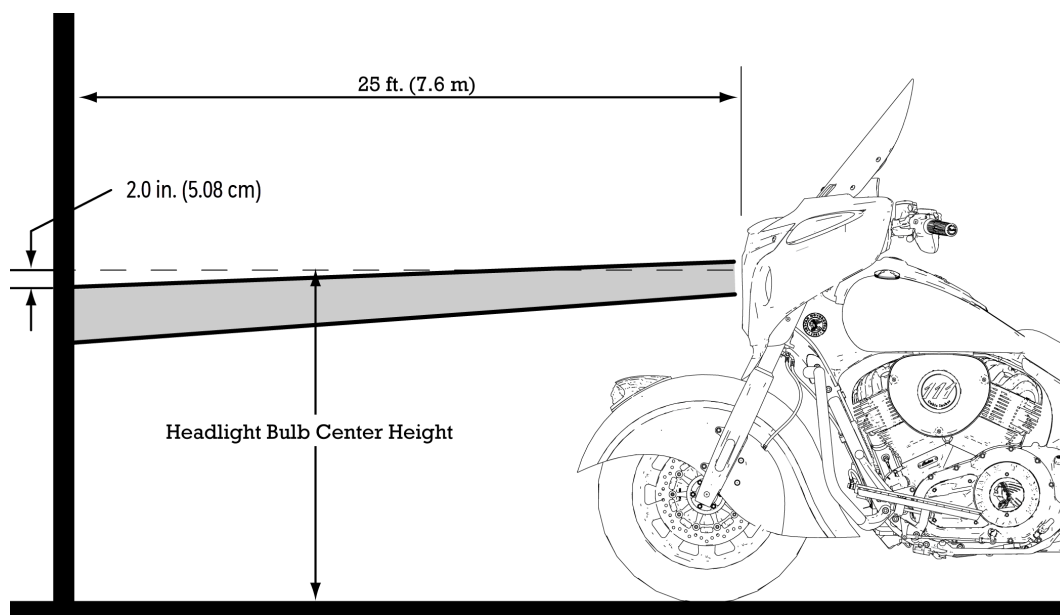
5. Measure the distance from the center of the headlight to the ground with the bike level.
6. On the wall or screen, mark one line at the same height above ground as the center of the headlight measurement (step 5) and another 2 inches lower.



7. Turn ignition/headlight switch to the ignition position. Set the handlebar headlight switch to the high beam position.
8. High beam is aligned with the “hot spot” or center of the high intensity zone centered on the horizontal/vertical axis that is located at the same height as the headlamp at a distance of 25 feet.



9. With the headlight switched to low beam, the top of the low beam pattern should be 2.0 inches (5.08 cm) below the horizontal centerline.



Note: Always refer to the owner’s manual and tech specifications when adjusting or changing headlights.

Additional Assistance

For further information, please contact the NCSHP Investigative Services Unit - Safety/Emissions Inspections Section at (919) 757-0752, or via the portal at <https://ndtiimprod.ondemand.sas.com/ISUCaseManagement>.