SURFACE VEHICLE INFORMATION REPORT

J985™ NOV2016

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Reaffirmed 2016-11

Superseding J985 FEB2009

Vision Factors Considerations in Rearview Mirror Design

RATIONALE

J985 has been reaffirmed to comply with the SAE five year review policy.

1. ***Scope***—The design and location of rear-viewing mirrors or systems, and the presentation of the rear view to the driver can best be achieved if the designer and the engineer have adequate references available on the physiological functions of head and eye movements and on the perceptual capabilities of the human visual system. The following information and charts are provided for this purpose. For more complete information of the relationship of vision to forward vision, see SAE SP-279.

2. ***References***

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE Paper 650464—Automobile Driver Eye Position, Meldrum, James F., SAE Transactions, Vol. 74, (1966)
SAE SP-279—Visual Considerations: Man, the Vehicle, and the Highway, Schmidt, I., and Connolly, Paul L., SAE, March, 1966

2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document.

Bioastronautics Data Book, Scientific and Technical Information Division, National Aeronautics and Space Administration (Washington, DC, NASA SP-3006), 1964

Design Aspects for Rear Vision in Motor Vehicles, SP-253, SAE, March 1964

The Measure of Man, Dreyfuss, Henry, New York: Whitney Library of Design, 1959

Handbook of Human Engineering Data, Tufts College Institute for Applied Experimental Psychology, Special Devices Center, Office of Nava Research, Project Design, NR 78-3001, 1951

Human Engineering Guide to Equipment Design, Morgan, C.T., Cook, J.S., et al., New York: McGraw-Hill, Inc., 1963

Human Engineering Guide for Equipment Designers, Woodson, W.E., Berkeley: University of California Press, 1960

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3. Vision Considerations in Rearview Mirror Design

3.1 Introduction—The design and location of rearview mirrors to provide adequate driver rear vision can best be performed when a basic knowledge of the physiological and perceptual capabilities of the driver's visual system are understood.

3.2 Driver's Field of View—The field of view for each eye of the driver extends in a horizontal plane 150 degrees (90 degrees outside and 60 degrees inside from the forward line of sight.) It is assumed that the forward line of sight is directly in line with the longitudinal axis of the vehicle. It can be seen from (see Figure 1) that the fields of view (left eye plus right eye) overlap 120 degrees, thus defining a binocular field of view. The vertical boundary to the binocular field of view is approximately 50 to 55 degrees above and 60 to 70 degrees below the forward line of sight (see Figure 2).

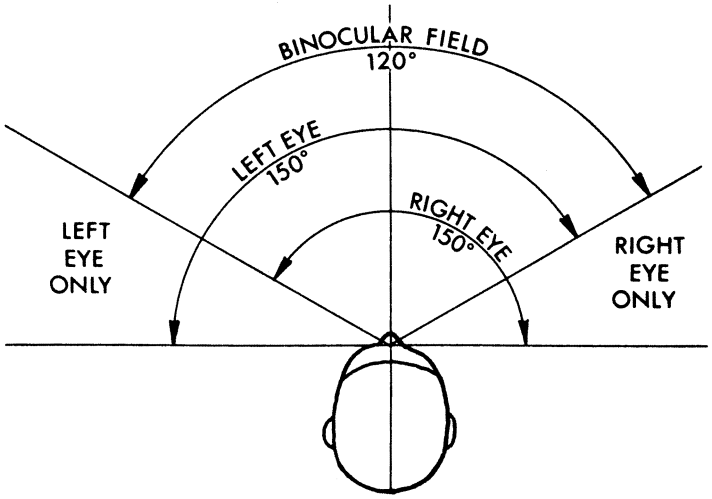

FIGURE 1—HORIZONTAL EXTENT OF THE BINOCULAR VISUAL FIELD

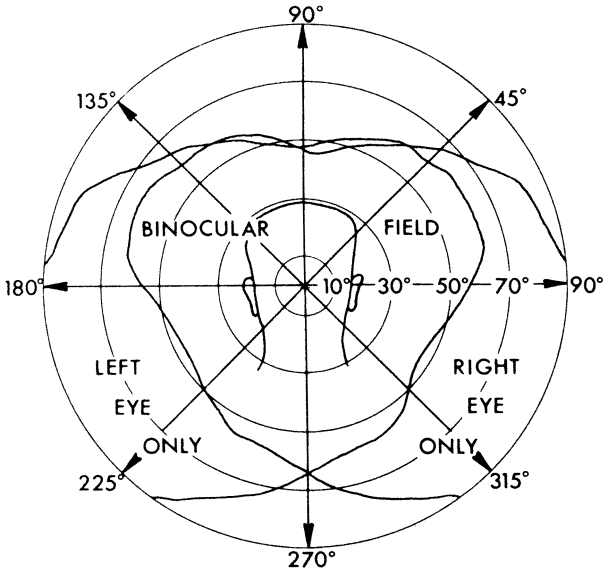

FIGURE 2—BINOCULAR VISUAL FIELD WITH HEAD AND EYES FIXED