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CIVIL AERONAUTICS AUTHORITY
WASHINGTON, D. C.

# N O T I C E

Redistribution of attached Amendment No. 20 of the Civil Air Regulations has been made in order to correct errors discovered in some of the copies previously circulated. All copies initially distributed were not in error, but in order to make sure that you have the correct information, please substitute the attached for the one you have.

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THE UNITED STATES OF AMERICA
CIVIL AERONAUTICS AUTHORITY
WASHINGTON, D. C.

At a session of the Civil Aeronautics Authority
held at its office in Washington, D. C.
on the 25th day of July, 1939.

Acting pursuant to the authority vested in it by the Civil Aeronautics Act of 1938, particularly sections 205(a) and 601(a) of said Act, and finding that its action is desirable in the public interest and is necessary to carry out the provisions of, and to exercise and perform its powers and duties under said Act, the Civil Aeronautics Authority hereby amends the Civil Air Regulations as follows:

AMENDMENT NO. 20
OF THE CIVIL AIR
REGULATIONS

POSITION LIGHTS

Effective August 15, 1939, Part 15 of the Civil Air Regulations is amended as follows:

1. By striking the word "equipment" in the title of section 15.2 and inserting in lieu thereof the word "appliances".

2. By striking section 15.20 and inserting in lieu thereof the following new section:

"15.20 Position lights."

"15.200 General provisions. Position lights prescribed in Part 04 of the Civil Air Regulations, in order to be certificated, shall be so constructed and capable of being so mounted as to comply with the regulations hereinafter prescribed."

"15.2000 A request for certification and such supporting data as may be prescribed herein shall be accompanied by a complete set of lights

described in the data. Such data shall include a copy of the instructions for the mounting of the lights in aircraft as furnished by the light manufacturer to purchasers."

"15.2001 As the forward (right and left) lights are complementary they will be certificated as a unit. The rear (tail) light will be certificated as a separate unit."

"15.2002 Forward lights are classified as follows:

(a) Standard forward position lights.

(b) Air Carrier forward position lights.

(c) Auxiliary position lights."

"15.201 Light distribution requirements. (See CAAM 15 for diagrams.)"

"15.2010 Definitions. Three dihedral angles hereinafter referred to as dihedral angle L, dihedral angle R, and dihedral angle A are defined as follows: dihedral angle L is formed by the intersection of two vertical planes, one passing through the forward axis of the light unit, as defined in the mounting instructions, and the other at an angle of 110 degrees to the first, measured to the left when looking away from the unit; dihedral angle R is formed by the intersection of two vertical planes, one passing through the forward axis of the light unit, as defined in the mounting instructions, and the other at an angle of 110 degrees to the first, measured to the right when looking away from the unit; and dihedral angle A (aft) is formed by the intersection of two vertical planes making dihedral angles of 70 degrees to the left and 70 degrees to the right, respectively, of a vertical plane passing through the rear axis of the light unit, as defined in the mounting instructions. Each dihedral angle shall be understood to include the bounding planes as well as the space between the planes."

"15.2011 Standard forward position lights. Each standard forward position light shall have an intensity of not less than 3 candles in all directions in dihedral angle L for the left light and in dihedral angle R for the right light. Within these dihedral angles, respectively, the intensity in all directions shall equal or exceed the minimum values given in Table I according to the angle between the direction of measurement and the forward axis of the unit.

Table I

Minimum permissible intensities in any plane through the forward axis of the unit

| At angles from forward axis not exceeding | Intensity |
|---|---|
| 60 degrees | 4 candles |
| 30 degrees | 8 candles |

In all directions in dihedral angle R for the left light and in dihedral angle L for the right light, a tolerance of 10 degrees will be allowed in which the intensity of these lights shall be reduced to not over 2 candles. In these same directions a further tolerance of an additional 10 degrees will be allowed in which the intensity shall be reduced to not more than 0.5 candle. In all directions in dihedral angle A a tolerance of 10 degrees will be allowed in which the intensity of these lights shall be reduced to a maximum intensity of 0.5 candle. In all directions outside the specified dihedral angle and the allowed tolerance angles for each unit, the stray light intensity shall not exceed 0.5 candle."

"15.2012 Air Carrier forward position lights. Each air carrier forward position light shall have an intensity of not less than 3 candles in all directions in dihedral angle L for the left light and in dihedral angle R for the right light. Within these dihedral angles, respectively, the

intensity in all directions shall equal or exceed the minimum values given in Table II according to the angle between the direction of measurement and the forward axis of the unit.

Table II
Minimum permissible intensities in any plane through the forward axis of the unit

| At angles from forward axis not exceeding | Intensity |
|---|---|
| 60 Degrees | 5 Candles |
| 30 Degrees | 10 Candles |
| 20 Degrees | 20 Candles |
| 15 Degrees | 30 Candles |
| 10 Degrees | 35 Candles |
| 5 Degrees | 40 Candles |

Within the same dihedral angles the intensities in the horizontal plane shall equal or exceed the minimum values given in Table III according to the angle between the direction of measurement and the forward axis of the unit.

Table III
Minimum permissible intensities in the horizontal plane through the forward axis of the unit

| At angles from forward axis not exceeding | Intensity |
|---|---|
| 80 Degrees | 5 Candles |
| 40 Degrees | 10 Candles |
| 30 Degrees | 20 Candles |
| 20 Degrees | 30 Candles |
| 10 Degrees | 40 Candles |

In all directions in dihedral angle R for the left light and in dihedral andle L for the right light, a tolerance of 10 degrees will be allowed in which the intensity of these lights shall be reduced to not over 10 candles. In these same directions a further tolerance of an additional 10 degrees will be allowed in which the intensity shall be reduced to not more than

1 candle. In all directions in dihedral angle A a tolerance of 10 degrees will be allowed in which the intensity of these lights shall be reduced to not more than 1 candle. In all directions outside the specified dihedral angle and the allowed tolerance angles for each unit, the stray light intensity shall not exceed 1 candle."

"15.2013 Auxiliary forward position lights. Each auxiliary forward position light shall have an intensity of not less than 20 candles in all directions not exceeding 30 degrees of the forward axis of the unit, measured in dihedral angle L for the left unit and in dihedral angle R for the right unit. Within the afore-described angles the intensity in all directions shall equal or exceed the minimum values given in Table IV according to the angle between the direction of the measurement and the forward axis of the unit.

Table IV.

Minimum permissible intensities in any plane through the forward axis of the unit

| At angles from forward axis not exceeding | Intensity |
|---|---|
| 20 Degrees | 30 Candles |
| 10 Degrees | 40 Candles |

In all directions in dihedral angle R for the left light and in dihedral angle L for the right light, a tolerance of 10 degrees will be allowed in which the intensity of these lights shall be reduced to not over 8 candles. In these same directions a further tolerance of an additional 10 degrees will be allowed in which the intensity shall be reduced to not more than 0.5 candle. In all directions in dihedral angle A the maximum intensity shall be less than 0.5 candle. In all directions outside the specified dihedral angle and the allowed tolerance angles for each unit, the stray light intensity shall not exceed 0.5 candle."

"15.2014 Rear position lights. Each rear position light shall have an intensity of not less than 4 candles in dihedral angle A. Within this dihedral angle the intensity in all directions not exceeding 70 degrees from the rear axis of the unit, shall be not less than 8 candles. In all directions in dihedral angle L and in dihedral angle R, a tolerance of 20 degrees will be allowed in which the intensity of this light must be reduced to a maximum stray light intensity of 1 candle. In all directions outside the specified dihedral angle and the allowed tolerance angles, the stray light intensity shall not exceed 1 candle."

"15.202 Color. All left forward lights shall be aviation red, all right forward lights shall be aviation green, and all rear lights shall be aviation white. These colors are defined as follows:

(a) Aviation red is a color having the following ICI chromaticity coordinates:

y is not greater than 0.335 and
z is not greater than 0.002

(b) Aviation green is a color having the following ICI chromaticity coordinates:

x is not greater than $0.440 - 0.320y$
x is not greater than $y - 0.170$ and
y is not less than $0.390 - 0.170x$

(c) Aviation white is a color having the following ICI chromaticity coordinates:

x is not less than 0.350
x is not greater than 0.540
$y - y_o$ is not numerically greater than 0.01
$y_o$ being the y coordinate of the Planckian radiator for which $x_o = x$."

"15.203 Light covers. The lamp and reflectors shall be protected by a cover which shall be of non-combustible material and so constructed that it will not change color or shape, or cloud, or suffer any considerable

loss of transmission in normal use. The coloring of those portions which are intended to transmit light shall be completely diffused through the material."

By the Authority:

/s/ Paul J. Frizzell

Paul J. Frizzell,
Secretary.

(SEAL)