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Lamps for Aircraft Lighting

RATIONALE

This document is basically a duplication of ANSI SR 25d -1997 (Assigned Miniature Lamp Codes). Because this document only contains old lamp part numbers. The American National Standards Lighting Group is no longer going to update ANSI SR 25d -1997.

STABILIZED NOTICE

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1. SCOPE

This SAE Aerospace Recommended Practice (ARP) lists the lamps in Table 1 that are recommended for the type of service indicated. This list is not intended as a catalog and does not include many types that are now in use. This specification is not applicable to Solid State Lighting Lamp Assemblies (Based LED lamps). It does, however, reflect current practice.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J573 Miniature Lamp Bulbs

2.2 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI C79.1 Nomenclature for Glass Bulbs Intended for Use with Electric Lamps

ANSI_IEC C81.61 Electric Lamp Bases

ANSI_IEC C81.63 Gauges for Electric Lamp Bases and Lamp holders

ANSI C78.390 Method of Designation for Electric Lamps - Miniature and Sealed Beam Incandescent Lamps

ANSI SR-25 Assigned Miniature Lamp Codes

3. DEFINITIONS

3.1 TRADE NUMBER

The trade number is recorded with the American National Standards Institute and is a description of the lamp including the following parameters:

- a. Design volts
- b. Design amperes/watts
- c. Candlepower/Mean Spherical Candela
- d. Filament type
- e. Light center length
- f. Maximum overall length
- g. Rated average laboratory life
- h. Base type
- i. Bulb type

This (Trade Number) is not a specification, but is an ordering abbreviation.

3.2 DESIGN VOLTS

Design volts show the voltage at which a lamp is designed for the tabulated ampere, candlepower mean spherical candela (MSCd), and rated laboratory life characteristics.

3.3 RATED AVERAGE LABORATORY LIFE

Rated average laboratory life is the average life obtained when 50% of a statistically large group of the same lamps still survive in closely controlled laboratory life testing at their design voltage. Lamps are typically tested using 60 Hz AC voltage. DC operation of lamps may reduce lamp life on some lower current lamps. Contact the lamp supplier for individual lamp details. Rated average laboratory life is not necessarily the same as service life. Conditions such as mechanical shock, vibration, voltage fluctuations, and environmental extremes may result in shorter average attained life.

3.4 BULB, BASE, FILAMENT, AND LIGHT CENTER LENGTH

Refer to SAE J573.

3.5 SERVICE

Service identifies the primary type of aircraft lighting for which the lamp was designed. However, lamps may be and are used in other service applications where their designs will permit.

4. NOTES

- 4.1 The change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document.

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TABLE 1A - SERVICE APPLICATION - AIRCRAFT LAMPS INTERIORS

Design Volts	Trade Number	Amps or Watts	MSCP MSCd	Bulb	Base	Filament	Light Center Length in	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number 624D-00	Military Standard
12.0	2059	10.0 W	10.7	T-2-1/4 T2 3/4	BA9 MIN BAY SPL	C-8	.59	1-1/4	31.8	.83	4000	0.012	6		
12.0	2059X (a)	10.0 W	8.6	T-2-1/4	BA9 MIN	CC-6-	.59	1-1/4	31.8	.83	4000	0.012	6		
12.80			11.56	T3	BAY SPL	C-8				.780					
12.8	1141	1.44 A	21	S-8	BA15s SC BAY	C-6	1-1/4	2	50.8	1.44	500	0.021	10	155-7799	MS35478-1141 M6363/12-3 (g)
13	89	.58 A	6	G-6	BA15s SC BAY	C-2R	3/4	1-7/16	36.5	.58	750	0.012	6	143-3159	MS15570-89 M6363/11-1 (g)
28	1308	.56 A	16	B-6	BA15s SC BAY	CC-8	1-1/16	1-3/4	44.5	.56	2000	0.016	7		
28	456	.17 A	2	G-4-1/2	B9A BAY MIN BAY	C-2F	9/16	1-1/16	27.0	.17	5000	0.012	6	941-8479	
28	301	.17 A	3	G-5	BA15s SC BAY	C-2F	11/16	1-3/8	34.9	.17	500	0.012	6	155-7947	MS25238-301 M6363/10-1 (g)
28	303	.30 A	6	G-6	BA15s SC BAY	C-2F	3/4	1-7/16	36.5	.30	500	0.012	6	155-7848	MS15570-303 M6363/11-2 (g)
28	9204 (a)	10.0 W	6.6	T-2-1/4	BA9 Min. BAY SPL	C-8 CC-6	.59	1-1/4	31.8	.36	4000	0.012	6		
28	9204X	10.0 W	8.2	T-2-1/4	BA9 Min. BAY SPL	C-8 CC-6	.59	1-1/4	31.8	.36	4000	0.012	6		
28	1309	.52 A	15	B-6	S.C. Bay BA15s SC BAY	2XC-2F OR 2XC- 2R OR 2XC6	1-1/16	1-3/4	44.5	.52	500 ANSI- 300	0.016	7	060-4707	
28	305	.51 A	15	S-8	S.C. Bay BA15s SC BAY	C-2V	1-1/8	2	50.8	.51	300	0.021	10	155-7791	MS35478-305 M6363/12-6 (g)
28	1691	.61 A	15	S-8	S.C. Bay BA15s SC BAY	2C-2R	1-1/8	2	50.8	.61	1000	0.021	10	295-2668	MS354787-1691 M6363/12-7 (g)
28	305 (b) 305 IF	.51 A	15	S-8 IF	S.C. Bay BA15s SC BAY	C-2V	28.0	2	50.8	.51	300	0.021	10	295-1680	
28	1691 (b) 1691 IF	.61 A	15	S-8 IF	S.C. Bay BA15s SC BAY	2C-2R	28.0	2	50.8	.61	1000	0.021	10	441-2708	
28	2232	.643 A	18	S-8	S.C. Bay BA15s SC BAY	CC-8	1-3/16	2	50.8	.643	2000	0.021	10		MS35478-2232 M6363/12-8 (g)
28	307	.67 A	21	S-8	S.C. Bay BA15s SC BAY	C-2V	1-1/8	2	50.8	.67	300	0.021	10	155-7784	MS35478-307 M6363/12-4 (g)
28	307 (b) 307 IF	.67 A	21	S-8 IF	S.C. Bay BA15s SC BAY	C-2V		2	50.8	.67	300	0.021	0	122-0264	

Design Volts	Trade Number	Amps or Watts	MSOP MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
28	1665	.80 A	21	S-8	S.C. Bay BA15s SC	C-2V	1-1/8	28.6	2	50.8	.80	1000	0.021	10	241-9703	
28	1665 (b) 1665 IF	.80 A	21	S-8 IF	S.C. Bay BA15s SC	C-2V			2	50.8	.80	1000	0.021	10	941-2709	MS35478-1665 IF
28	2233	.766 A	21	S-8	S.C. Bay BA15s SC	CC-8	1-3/16	30.0	2	50.8	.766	2000	0.021	10		MS35478-2233 M6363/12-9 (g)
28	3011	1.29 A	44	S-11	S.C. Bay BA15s SC	C-2V	1-1/4	31.8	2-3/8	60.3	1.29	1000	0.021	10	353-5753	MS25235-3011 M6363/13-2 (g)
28	705	.51 A	15	S-8	S.C. Bay BA15s SC	CC-6	1.12	28.4	2	50.8	.51	900	0.021	10		
(c)	* 5004WW (c)	4 W		T-5	Min. Pinless				6 (d)	152		7500 (e)	0.045	20	053-8273	
(c)	* 5008WW (c)	8 W		T-5	Min. Pinless				12 (d)	305		7500 (e)	0.075	34	955-9174	
(c)	* 5013WW (c)	13 W		T-5	Min. Pinless				21 (d)	533		7500 (e)	0.125	57	880-7800	
(c)	* 5104WW (c)	4 W		T-5	Min. Bi Pin				6 (d)	152		7500 (e)	0.045	20	916-8196	
(c)	* 5106WW (c)	6 W		T-5	Min. Bi Pin				9 (d)	228		7500 (e)	0.06	27	691-1397	
(c)	* 5108WW (c)	8 W		T-5	Min. Bi Pin				12.0 (d)	305		7500 (e)	0.075	34	955-9173	
(c)	* 5113WW (c)	13 W		T-5	Min. Bi Pin				21.0 (d)	533		7500 (e)	0.125	57	955-9164	
(c)	* F14T12WW (c)	14 W		T-12	Med. Bi Pin				15 (d)	381		9000 (b)	0.200	91		
(c)	* F15T12WW (c)	15 W		T-12	Med. Bi Pin				18 (d)	457		9000 (b)	0.247	112		
(c)	* F20T12WW (c)	20 W		T-12	Med. Bi Pin				24 (d)	610		9000 (b)	0.320	145		
(c)	* F30T12WW (c)	30 W		T-12	Med. Bi Pin				36 (d)	914		13000 (b)	0.478	217		
28	311	1.29A	50	S-11	BA15S SC BAY	C-2V	1-1/4	31.8	2-3/8	60.3	1.29	300	0.021	10	MS25235-311 M6363/13-2 (g)	

NOTES:

- Opaque tipped lamp.
- Inside frosted.
- Fluorescent lamp to be used with auxiliary of proper design.
- Nominal length.
- Based on three burning hours per start.
- These part numbers are listed with M6363/xx-xx series, but are not approved or qualified to MIL-L-6363. Industry version may be procured with ANSI trade numbers.

* These are not listed in SR25d-1997.

TABLE 1B - SERVICE APPLICATION - AIRCRAFT LAMPS
INDICATOR/INSTRUMENTS

Design Volts	Trade Number	Amps or Watts	MSCP MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Lab Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
5	60-680	.06 (a)	.03	T-1	Wire Term. Sub-Mid Fl.	C-2R	3/16	4.7	1/4	6.35	.06	(b)	0.0004	.2	878-1965	MS24367-680
5	682-(0)	.06 (a)	.03	T-1	SX4 SUB MIN	C-2R	3/16	4.7	3/8	9.14	.06	(b)	0.0006	.3	879-4980	MS24515-682 M6363/6-1 (g)
5	683	.06 (a)	.05	T-1	Wire Term. Sub-Mid Fl.	C-2R	3/16	4.7	1/4	6.35	.06	(c)	0.0004	.2	060-2941	MS24367-683
5	685-(0)	.06 (a)	.05	T-1	SX4 SUB MIN	C-2R	3/16	4.7	3/8	9.14	.06	(c)	0.0006	.3	752-2581	MS24515-685 M6363/6-2 (g)
5	715	.115 (a)	.15	T-1	Wire Term. Sub-Mid Fl.	C-2R	3/16	4.7	1/4	6.35	.115	(c)	0.0004	.2	080-4508	MS24367-715
5	718-(0)	.115 (a)	.15	T-1	SX4 SUB MIN	C-2R	3/16	4.7	3/8	9.14	.115	(c)	0.0006	.3	764-8237	MS24515-718 M6363/6-4 (g)
6	316	.7 (a)	3.4	T-3-1/4	FLANGE Min. Bay	C-26	5/8	15.8	1-3/16	30.0	.7	500	0.006	3	817-9803	MS25231-316 M6363/9-1 (g)
6	328-(0)	.2 (a)	.34 (d)	T-1-3/4	Mid. Flange SX6 MID	C-6	3/8	9.5	5/8	15.8	.2	1000 (e)	0.0012	.5	155-7857	MS25237-328 M6363/8-2 (f)
13	89	.58 (a)	6	6-6 G6	FLANGE S.C. Bay BA15s SC BAY	C-2R	3/4	19.0	1-7/16	36.5	.58	750	0.012	5	143-3159	MS15570-39 M6363/11-1 (g)
13	1816	.33 (a)	3	T-3-1/4	Min. Bay BA9 MIN BAY	C-2R C-2V	5/8	15.8	1-3/16	30.0	.33	1000	0.006	3	155-7949	
14	330-(0)	.08 (a)	0.5	T-1-3/4	Mid. Flange SX6 MID	C-2F	3/8	9.5	5/8	15.8	.08	750 1500	0.0012	.5	196-4491	
28	310 301	.17 (a)	3	6-5 G6	FLANGE S.C. Bay BAY15d DC BAY	C-2F	11/16	17.3	1-3/8	34.9	.17	500	0.012	5	155-7947	MS25238-301 M6363/10-1 (g)
28	303	.30 A	6	6-6 G6	S.C. Bay BAY15d DC BAY	C-2F	3/4	19.0	1-7/16	36.5	.30	500	0.012	5	155-7848	MS15570-303 M6363/11-2 (g)
28	313	.17 A	3.5	T-3-1/4	Min. Bay BA9 MIN BAY	C-2F	5/8	15.8	1-3/16	30.0	.17	500	0.006	3	155-8714	MS25231-313 M6363/9-2 (g)
28	1864	.17 A	3.0	T-3-1/4	Min. Bay BA9 MIN BAY	C-2F	5/8	15.8	1-3/16	30.0	.17	1500	0.006	3	765-8443	
28	387-(0)	.04 A	0.3	T-1-3/4	Mid. Flange SX6 MID FLANGE	C-2F	3/8	9.5	5/8	15.8	.04	7000	0.0012	.5	763-7744	MS25237-387 M6363/8-7 (f)
28	327-(0)	.04 A	.34	T-1-3/4	Mid. Flange SX6 MID FLANGE	C-2F	3/8	9.5	5/8	15.8	.04	4000	0.0012	.5	155-7836	MS25237-327 M6363/8-5 (f)

Design Volts	Trade Number	Amps or Watts	MSCP MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Lab Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
28	1495	.30 A	6	T-4-1/2	Min. Bay BA9 MIN BAY	C-2F	5/8	15.8	1-3/8	34.9	.30	500	0.006	3	299-4742	MS25069-1495
28	1495X	.30 A	6	T-4-1/2	Min. Bay BA9 MIN BAY	C-2F	5/8	15.8	1-3/8	34.9	.30	500	0.006	3		M6363/14-1X (g)

NOTES:

- (a) For purposes of wiring design maximum amperes at design volts may be approximately 10% greater than design amperes.
 (b) Actual life depends on use and environmental extremes. Theoretical design average life is 100,000 + hours.
 (c) Actual life depends on use and environmental extremes. Theoretical design average life is 40,000 + hours.
 (d) At 5.0 V.
 (e) When operated at 5 V, average laboratory life will be approximately 8000 h.
 (f) These are Military Qualified Product Listing (QPL) parts per MIL-L-6363.
 (g) These part numbers are listed with M6363/xx-xx, but are not approved or qualified to MIL-L-6363. Industry version may be procured with ANSI trade numbers.

None of the following are listed in SR25d-1997.

TABLE 1C - SERVICE APPLICATION - AIRCRAFT LAMPS LANDING

Design Volts	Trade Number	Amps or Watts	MSCP MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Lab Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
13	4509 (a)	100 W		PAR-36	Scr. Term.	C-6			2-3/4	69.8	7.69	25	0.52	236	237-7867	MS25243-4509
13	4537 (a)	100 W		PAR-46	Scr. Term.	C-6			3-1/8	79.4	7.69	25	0.92	417	946-9636	
13	4313 (a)	250 W		PAR-36	Scr. Term.	C-6			2-3/4	69.8	19.23	25	0.52	236	946-4807	
13	4522 (a)	250 W		PAR-46	Scr. Term.	C-2			3-1/8	79.4	19.23	25	0.92	417	155-7920	MS25241-4522
28	4553 (a)	250 W		PAR-46	Scr. Term.	CC-8			3-1/8	79.4	8.92	25	0.92	417	725-4683	MS25241-4553
28	4557 (a)(b)	1000 W/		PAR-64	Scr. Term.	CC-8/C6			3-3/4	95.2	35.70	25/100	2.00	907	519-2131	
		400 W														
28	5557 (a)(b)	1000 W/		PAR-64	Scr. Term.	CC-8/C6			3-3/4	95.2	35.70	50/100	2.00	907		MS25242-Q4559
		400 W														
28	Q4559 (a)	600 W		PAR-64	Scr. Term.	CC-8			3-3/4	95.2	21.41	25	2.00	907	145-1110	
28	Q4559X (a)	600 W		PAR-64	Scr. Term.	C-6			3-3/4	95.2	21.41	100	2.00	907		
28	4581 (a)(c)	450 W		PAR-46	Scr. Term.	CC-8			3-1/8	79.4	16.08	10	0.92	417	557-3065	MS25241-4581
28	4596 (a)	250 W		PAR-36	Scr. Term.	CC-8			2-3/4	69.8	8.92	25	0.52	236	577-8450	
28	Q4681 (a)	450 W		PAR-46	Scr. Term.	C-6			2-5/8	67.0	16.07	50	0.92	417		

NOTES:

(a) Beam data for PAR lamps.

(b) None of the following is listed in SR25D-1997.

Lamp No.	Type Cover Glass	Approx. Initial	Max. Peak CP Cd CP	Approx. Beam Spread (deg)	Max. (deg) Horiz.	Max. (deg) Vertical
4313	Clear	150,000		15	8	
4502	Prism	10,000		40	7	
4509	Clear	110,000		11	6	
4522	Clear	290,000		12	10	
4537	Clear	200,000		11	6	
4551	Prism	75,000		50	10	
4553	Clear	300,000		11	12	
4557	Clear	540,000/100,000		11/25	15/11	
Q4559	Clear	600,000		12	9	
Q4559X	Clear	765,000		11	7.5	
Q4566	Clear	150,000		16	12	
4570	Prism	32,000		50	9	
4581	Clear	400,000		13	14	
4596	Clear	150,000		11	12	
Q4597	Prism	16,000		60	35	
Q4629	Prism	20,000		55	35	
Q4631	Clear	90,000		13	11	
Q4632	Clear	75,000		14	12	
Q4681	Clear	310,000		15	9	
5557	Clear	540,000/100,000		11/25	15/11	

(b) Dual filament lamp (1000 W-landing, 400 W-taxing).

(c) Consult lamp manufacturer before using.

TABLE 1D - SERVICE APPLICATION - AIRCRAFT LAMPS
TAXIING

Design Volts	Trade Number	Amps or Watts	MSCd or MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
28	1986	250 W	600	T-4	Wire Term	CC-6			2	50.0	8.92	100	0.031	14	6240-00	
28	4551 (a) *	250 W		PAR 46	SPECIAL	CC-6			3-3/4	95.2	8.92	25	0.92	417	583-3334	MS24517-4551
28	4570 (a) *	150 W		PAR 46	Scr. Term.	CC-6			3-3/4	95.2	5.36	300	0.92	417	132-5328	MS28926-4570
36	HLX64663 *	400	1273		G6 35-20		1.417	36	2.362	60	11.11	50	0.014	6.4		
36	HLX64664 *	400	1154		G6 35-20		1.417	36	2.244	57	11.11	150	0.014	6.4		

*Not listed in SR25d-1997

NOTES:

(a) Beam data for PAR lamps.

None of the following is listed in SR25d-1997.

Lamp No.	Type Cover Glass	Approx. Initial Max. Peak CP Cd	Approx. Beam Spread (deg) to 10% Horiz.	Max. (deg) Vertical
4313	Clear	150,000	15	8
4502	Prism	10,000	40	7
4509	Clear	110,000	11	6
4522	Clear	290,000	12	10
4537	Clear	200,000	11	6
4551	Prism	75,000	50	10
4553	Clear	300,000	11	12
4557	Clear	540,000/100,000	11/25	15/11
Q4559	Clear	600,000	12	9
Q4559X	Clear	765,000	11	7.5
Q4566	Clear	150,000	16	12
4570	Prism	32,000	50	9
4581	Clear	400,000	13	14
4596	Clear	150,000	11	12
Q4597	Prism	16,000	60	35
Q4629	Prism	20,000	55	35
Q4631	Clear	90,000	13	11
Q4632	Clear	75,000	14	12
Q4681	Clear	310,000	15	9
5557	Clear	540,000/100,000	11/25	15/11

TABLE 1E - SERVICE APPLICATION - AIRCRAFT LAMPS
EXTERIOR EMERGENCY LIGHTING

Design Volts	Trade Number	Amps or Watts	MSCD MSCd	Bulb	Base	Filament	Light Center Length in	Light Center Length mm	Maximum Overall Length in	Maximum Overall Length mm	Amps at Design Volts	Rated Average Lab Life (h)	Approx. Weight lb	Approx. Weight g	National Stock Number	Military Standard
6.0	767	2.0 A	19	T2-1/4	Min. Bay BA9 MIN BAY	C-6	.56	14.2	1.13	28.7	2.0	50	.006	3	6240-00	
6.0	1317	.51 A	3.4	B-6	S.C. Bay BA15s SC BAY	C-6	1.12	28.4	1.75	44.4	.51	100	.012	5		
6.0	784	1.0 A	9	T2-1/4	G-4 Two Pin	C-6	.77	19.6	1.0	25.4	1.0	50	.004	2		
6.0	786	2.0 A	19	T2-1/4	G-4 Two Pin	C-6	.77	19.6	1.0	25.4	2.0	50	.004	2		