The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE RECOMMENDED PRACTICE

SAE ARP881 REV. D

Issued 1965-10
Revised 1997-09

Submitted for recognition as an American National Standard

Superseding ARP881C

Lamps for Aircraft Lighting

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. It does, however, reflect current practice.

2. REFERENCES:

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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J573 Operator Precautions

QUESTIONS REGARDING THIS DOCUMENT: (412) 772-8510 FAX: (412) 776-0243
TO PLACE A DOCUMENT ORDER: (412) 776-4970 FAX: (412) 776-0790

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
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, 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:

The change bar (**l**) 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.

PREPARED BY SAE COMMITTEE A-20, AIRCRAFT LIGHTING

TABLE 1A - Service Application - Aircraft Lamps
Interiors

Design Volts	Trade Number	Amps or Watts	MSCP	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 6240-00	Military Standard
12.0	2059	10.0 W	10.7	T-2-1/4	Min. Bay	CC-6	.59	15.0	1-1/4	31.8	.83	4000	0.012	6		
12.0	2059X (a)	10.0 W	8.6	T-2-1/4	Min. Bay	CC-6	.59	15.0	1-1/4	31.8	.83	4000	0.012	6		
12.8	1141	1.44 A	21	S-8	S.C. Bay	C-6	1-1/4	31.8	2	50.8	1.44	500	0.021	10	155-7799	MS35478-1141
13	89	.58 A	6	G-6	S.C. Bay	C-2R	3/4	19.0	1-7/16	36.5	.58	750	0.012	6	143-3159	MS15570-89
28	1308	.56 A	16	B-6	S.C. Bay	CC-8	1-1/16	27.0	1-3/4	44.5	.56	2000	0.016	7		
28	456	.17 A	2	G-4-1/2	Min. Bay	C-2F	9/16	27.0	1-1/16	27.0	.17	5000	0.012	6	941-8479	
28	301	.17 A	3	G-5	S.C. Bay	C-2F	11/16	17.3	1-3/8	34.9	.17	500	0.012	6	155-7947	MS25238-301
28	303	.30 A	6	G-6	S.C. Bay	C-2F	3/4	19.0	1-7/16	36.5	.30	500	0.012	6	155-7848	MS15570-303
28	9204 (a)	10.0 W	6.6	T-2-1/4	Min. Bay	C-8	.59	15.0	1-1/4	31.8	.36	4000	0.012	6		
28	9204X	10.0 W	8.2	T-2-1/4	Min. Bay	C-8	.59	15.0	1-1/4	31.8	.36	4000	0.012	6		
28	1309	.52 A	15	B-6	S.C. Bay	C-2F	1-1/16	27.0	1-3/4	44.5	.52	500	0.016	7	060-4707	
28	305	.51 A	15	S-8	S.C. Bay	C-2V	1-1/8	28.6	2	50.8	.51	300	0.021	10	155-7791	MS35478-305
28	1691	.61 A	15	S-8	S.C. Bay	2C-2R	1-1/8	28.6	2	50.8	.61	1000	0.021	10	295-2668	MS354787-1691
28	3051F (b)	.51 A	15	S-81F	S.C. Bay	C-2V			2	50.8	.51	300	0.021	10	295-1680	
28	16911F (b)	.61 A	15	S-81F	S.C. Bay	2C-2R			2	50.8	.61	1000	0.021	10	441-2708	
28	2232	.643 A	18	S-8	S.C. Bay	CC-8	1-3/16	30.6	2	50.8	.643	2000	0.021	10		MS35478-2232
28	307	.67 A	21	S-8	S.C. Bay	C-2V	1-1/8	28.6	2	50.8	.67	300	0.021	10	155-7784	MS35478-307
28	3071F (b)	.67 A	21	S-81F	S.C. Bay	C-2V			2	50.8	.67	300	0.021	10	122-0264	
28	1665	.80 A	21	S-8	S.C. Bay	C-2V	1-1/8	28.6	2	50.8	.80	1000	0.021	10	241-9703	
28	16651F (b)	.80 A	21	S-81F	S.C. Bay	C-2V			2	50.8	.80	1000	0.021	10	941-2709	MS35478-16651
28	2233	.766 A	21	S-8	S.C. Bay	CC-8	1-3/16	30.0	2	50.8	.766	2000	0.021	10		MS35478-2233
28	3011	1.29 A	44	S-11	S.C. Bay	C-2V	1-1/4	31.8	2-3/8	60.3	1.29	1000	0.021	10	353-5753	MS25235-3011
28	705	.51 A	15	S-8	S.C. Bay	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				15.0 (d)	152		7500 (e)	0.045	20	916-8196	
(c)	5106WW (c)	6 W		T-5	Min. Bi Pin				18.0 (d)	228		7500 (e)	0.06	27	691-1397	
(c)	5108WW (c)	8 W		T-5	Min. Bi Pin				24.0 (d)	305		7500 (e)	0.075	34	955-9173	
(c)	5113WW (c)	13 W		T-5	Min. Bi Pin				36.0 (d)	533		7500 (e)	0.125	57	955-9164	
(c)	F14T12WW (c)	14 W		T-12	Med. Bi Pin					381		9000 (b)	0.200	91		
(c)	F15T12WW (c)	15 W		T-12	Med. Bi Pin					457		9000 (b)	0.247	112		
(c)	F20T12WW (c)	20 W		T-12	Med. Bi Pin					610		9000 (b)	0.320	145		
(c)	F30T12WW RS (c)	30 W		T-12	Med. Bi Pin					914		13000 (b)	0.478	217		

NOTES:

(a) Opaque tipped lamp.
(b) Inside frosted.
(c) Fluorescent lamp to be used with auxiliary of proper design.
(d) Nominal length.
(e) Based on three burning hours per start.

TABLE 1B - Service Application - Aircraft Lamps
Indicator/Instruments

Design Volts	Trade Number	Amps or Watts	MSCP	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 6240-00	Military Standard
5	60	.06 (a)	.03	T-1	Wire Term.	C-2R			1/4	6.35	.06	(b)	0.0004	.2	878-1965	MS24367-680
5	682-*(0)	.06 (a)	.03	T-1	Sub-Mid Fl.	C-2R	3/16	4.7	3/8	9.14	.06	(b)	0.0006	.3	879-4980	MS24515-682
5	683	.06 (a)	.05	T-1	Wire Term.	C-2R			1/4	6.35	.06	(c)	0.0004	.2	060-2941	MS24367-683
5	685-*(0)	.06 (a)	.05	T-1	Sub-Mid Fl.	C-2R	3/16	4.7	3/8	9.14	.06	(c)	0.0006	.3	752-2581	MS24515-685
5	715	.115 (a)	.15	T-1	Wire Term.	C-2R			1/4	6.35	.115	(c)	0.0004	.2	080-4508	MS24367-715
5	718-((0)	.115 (a)	.15	T-1	Sub-Mid Fl.	C-2R	3/16	4.7	3/8	9.14	.115	(c)	0.0006	.3	764-8237	MS24515-718
6	316	.7 (a)	3.4	T-3-1/4	Min. Bay	C-26	5/8	15.8	1-3/16	30.0	.7	500	0.006	3	817-9803	MS25231-316
6	328-*(0)	.2 (a)	.34 (d)	T-1-3/4	Mid. Flange	C-6	3/8	9.5	5/8	15.8	.2	1000 (e)	0.0012	.5	155-7857	MS25237-328
13	89	.58 (a)	6	6-6	S.C. Bay	C-2R	3/4	19.0	1-7/16	36.5	.58	750	0.012	5	143-3159	MS15570-39
13	1816	.33 (a)	3	T-3-1/4	Min. Bay	C-2R	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	C-2F	3/8	9.5	5/8	15.8	.08	750	0.0012	.5	196-4491	
28	310	.17 (a)	3	6-5	S.C. Bay	C-2F	11/16	17.3	1-3/8	34.9	.17	500	0.012	5	155-7947	MS25238-301
28	303	.30 A	6	6-6	S.C. Bay	C-2F	3/4	19.0	1-7/16	36.5	.30	500	0.012	5	155-7848	MS15570-303
28	313	.17 A	3.5	T-3-1/4	Min. Bay	C-2F	5/8	15.8	1-3/16	30.0	.17	500	0.006	3	155-8714	MS25231-313
28	1864	.17 A	3.0	T-3-1/4	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	C-2F	3/8	9.5	5/8	15.8	.04	7000	0.0012	.5	763-7744	MS25237-387
28	327-*(0)	.04 A	.34	T-1-3/4	Mid. Flange	C-2F	3/8	9.5	5/8	15.8	.04	4000	0.0012	.5	155-7836	MS25237-327
28	1495	.30 A	6	T-4-1/2	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	C-2F	5/8	15.8	1-3/8	34.9	.30	500	0.006	3		

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 8,000 h.

TABLE 1C - Service Application - Aircraft Lamps
Landing

Design Volts	Trade Number	Amps or Watts	MSCP	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 6240-00	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/ 400 W		PAR-64	Scr. Term.	CC-8/ C6			3-3/4	95.2	35.70	25/100	2.00	907	519-2131	
28	5557 (a)(b)	1000 W/ 400 W		PAR-64	Scr. Term.	CC-8/ C6			3-3/4	95.2	35.70	50/100	2.00	907		MS25242-Q4559
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.

Lamp No.	Type Cover Glass	Approx. Initial Max. Peak CP	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

(b) Dual filament lamp (1000 W-landing, 400 W-taxiing).
(c) Consult lamp manufacturer before using.

TABLE 1D - Service Application - Aircraft Lamps
Taxiing

Design Volts	Trade Number	Amps or Watts	MSCP	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 6240-00	Military Standard
28	1986	250 W	600	T-4	Wire. Term.	CC-6			2	50.0	8.92	100	0.031	14		
28	4551 (a)	250 W		PAR-46	Scr. Term.	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 (EVD)	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	CC-6	1.417	36	2.244	57	11.11	150	0.014	6.4		

NOTES:
(a) Beam data for PAR lamps.

Lamp No.	Type Cover Glass	Approx. Initial Max. Peak CP	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	MSCP	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 6240-00	Military Standard
6.0	767	2.0 A	19	T2-1/4	Min. Bay	C-6	.56	14.2	1.13	28.7	2.0	50	.006	3		
6.0	1317	.51 A	3.4	B-6	S.C. 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		