SOCIETY OF AUTOMOTIVE ENGINEERS, INC. • TWO PENNSYLVANIA PLAZA • NEW YORK, NEW YORK 10001

LAND SEA AIR SPACE

TECHNICAL REPORT J573e

LAMP BULBS AND SEALED UNITS—SAE J573e

SAE Standard

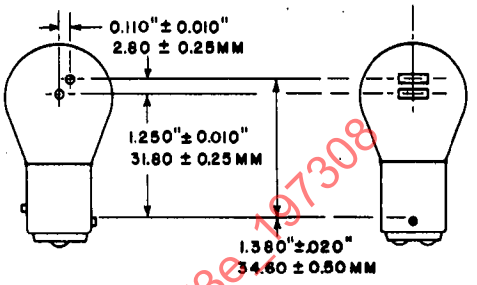
Report of Lighting Division approved March 1918 and last revised by Lighting Committee August 1973.

1. Scope—Many of the lighting devices on motor vehicles are required and are essential to operation on the highway. To maintain lighting performance, it is important that the bulb and sealed unit types employed be readily available, when needed, throughout the country in normal service channels. Therefore, this SAE Standard lists an assortment of *current popular types*, together with their *design characteristics*, which are recommended for use wherever practicable. It is recognized that because of constantly changing and improving technology, the list may be incomplete. Also, instances may arise in the design of some devices which require the employment of other types while achieving the desired performance.

Some of the design characteristics in this standard are listed solely for the sake of standardization and have no bearing on how lamp bulbs perform in lighting devices on the highway. A condensed list of specifications and their applicable tolerances is presented in SAE J1049.

2. Definition

2.1 **Accurate Rated Bulbs**—A bulb operated at design mean spherical candela (Table 2) and having its filament(s) within ±0.010 in (0.25 mm) of nominal design position. This applies to Nos. 1156, 1157, and 1157NA only. (See Fig. 1 for the spacing between the major and minor filaments of Nos. 1157 and 1157NA.) Rated bulbs shall be seasoned at rated voltage for 1% of their design life or 10 h maximum.



AXIAL ALIGNMENT TOLERANCE:
NARROW VIEW ±0.010" (±0.25mm)
WIDE VIEW ±0.020" (±0.50mm)

(USE DIMENSIONS OF LOWER FILAMENT FOR 1156 BULB)

FIG. 1—FILAMENT LOCATION FOR RATED BULBS

TABLE 1—BULB DIMENSIONS (SEE FIG. 2)

Bulb	Base	Max Bulb Dia (D)		Max Exposed Length (L)	
		In	mm	In	mm
G-3-1/2	A-1	0.46	11.7	0.70	17.8
T-3-1/4	Wedge	0.40	10.2	0.81	20.6
T-3-1/4	A-1	0.43	11.0	0.94	23.9
G-4-1/2	A-1	0.59	15.0	0.84	21.3
G-6	B-1, B-2	0.75	19.0	1.19	30.2
B-6	B-1, B-2	0.78	19.8	1.49	37.8
S-8	B-1, B-2	1.04	26.4	1.7	43.2
S-8	C-2	1.04	26.4	1.7	43.2

TABLE 2—TYPICAL LAMP BULBS FOR MOTOR VEHICLES

Typical Service[a]	Trade No.	Design						Filament Data						Bulb Type[b]	Base Data	
		Mean Spherical Candela	cd Tol, ±%	Volts	Design Amps	Amp Tol, ±%	Rated Average Lab Life, h	Type[b]	Light Center Length (LCL)		LCL Tolerance		Axial Alignment Tolerance			Type[b]	Designation
									In	mm	± In	± mm	± In	± mm			
C	53	1	20	14.4	0.12	10	1000	C-2V	0.50	12.7	0.09	2.3	0.09	2.3	G-3-1/2	A-1	Min Bay
C, M	57	2	20	14.0	0.24	10	500	C-2V	0.56	14.2	0.09	2.3	0.09	2.3	G-4-1/2	A-1	Min Bay
C, M	1895	2	20	14.0	0.27	10	1500	C-2F	0.56	14.2	0.09	2.3	0.09	2.3	G-4-1/2	A-1	Min Bay
T, P, M, L	67	4	15	13.5	0.59	8	2000	C-2R	0.81	20.6	0.09	2.3	0.09	2.3	G-6	B-1	SC Bay
T, P, M, L	97	4	15	13.5	0.69	8	2000	C-2V	0.81	20.6	0.09	2.3	0.09	2.3	G-6	B-1	SC Bay
C	161	1	20	14.0	0.19	10	1500	C-2F	0.56	14.2	0.09	2.3	0.09	2.3	T-3-1/4	W-2	Wedge
C	168	3	20	14.0	0.35	10	1500	C-2F	0.56	14.2	0.09	2.3	0.09	2.3	T-3-1/4	W-2	Wedge
C, M	194	2	20	14.0	0.27	10	1500	C-2F	0.56	14.2	0.04	1.0	0.06	1.5	T-3-1/4	W-2	Wedge
D, S, B	1156	32	10	12.8	2.10	5	600	C-6	1.25	31.8	0.04	1.0	0.04	1.0	S-8	B-1	SC Bay[d]
P, S, T, D	1157	32	10	12.8	2.10	5	600	C-6	1.25	31.8	0.04	1.0	0.04	1.0	S-8	C-2	DC Bay[d]
		3	12	14.0	0.59	8	2000	C-6	—[c]	—[c]	—[c]	—[c]	—[c]	—[c]			
D, M, P	1157NA	24	30	12.8	2.10	5	600	C-6	1.25	31.8	0.04	1.0	0.04	1.0	S-8	C-2	DC Bay[d]
		2.2	30	14.0	0.59	8	2000	C-6	—[c]	—[c]	—[c]	—[c]	—[c]	—[c]			

[a] Letter designations are defined as follows: B—backup; C—indicator; D—turn signal; M—marker, clearance, identification; P—parking; S—stop; T—tail; L—license.

[b] See Figs. 2, 4, and 5.

[c] See Fig. 3 for filament spacing and light center length.

[d] Plane of pins with respect to filament is 90 ± 15 deg. On remaining types filament orientation is random.

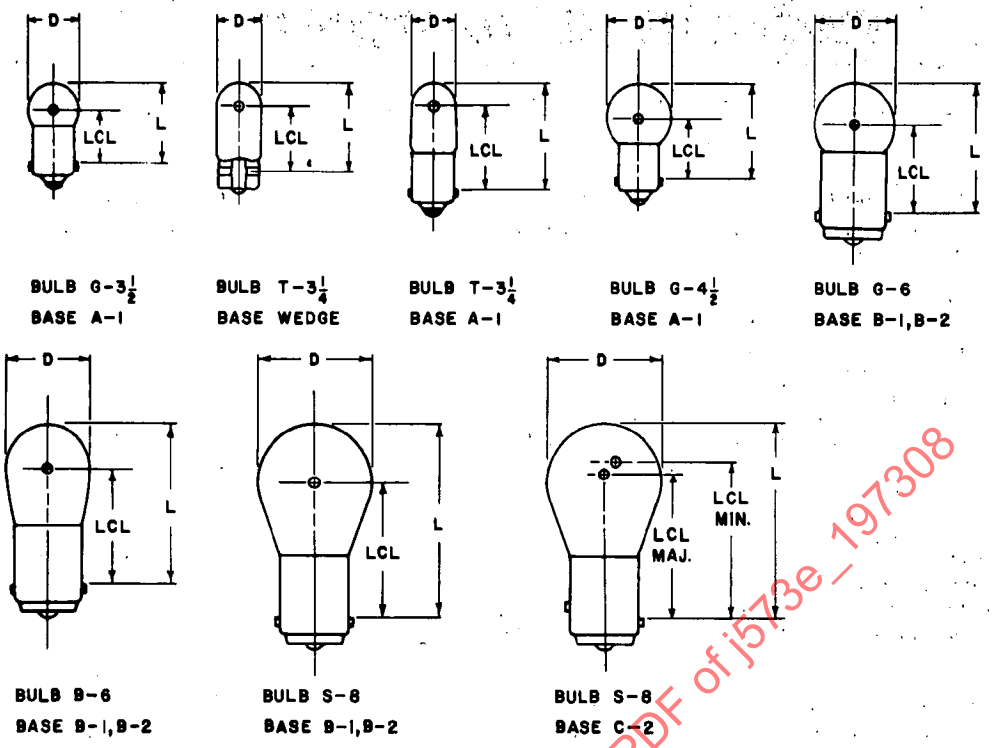
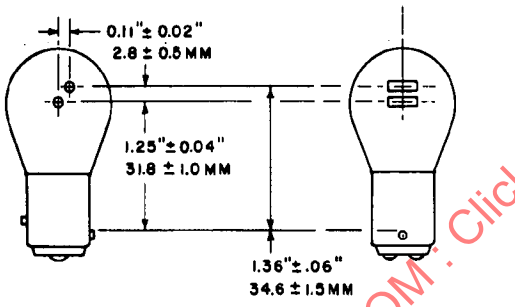


FIG. 2—BULB TYPES



(USE DIMENSIONS OF LOWER FILAMENT FOR 1156 BULB)

FIG. 3—BULB FILAMENT DESIGN LOCATION

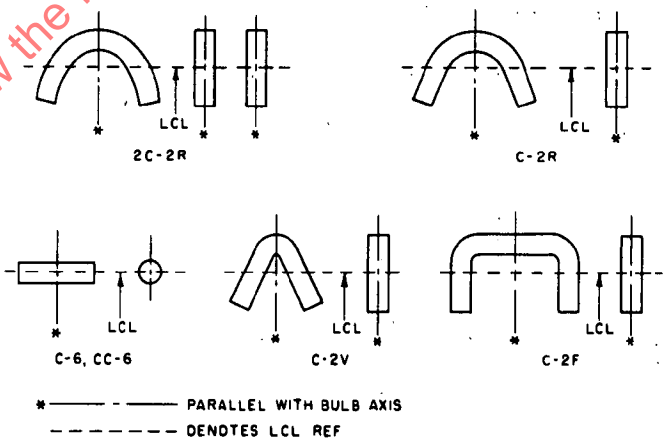


FIG. 4—FILAMENT TYPES

TABLE 3—TYPICAL SEALED BEAM UNITS

Type of Service[a]	Trade No.	Design		Rated Average Lab Life, h at 14.0 V	Max. Amps at Design Volts	Filament Type	Bulb Type	Dimensional Specification[c]	Terminals	
		Watts	Volts[b]						No.	Type
H	4000	37.5–60	12.8–12.8	200–320	3.14–5.02	C-6/C-6	PAR 46	Fig. 4	3	Lugs
H	4001	37.5	12.8	200	3.14	C-6	PAR 46	Fig. 3	2	Lugs
H	5001	50	12.8	200	4.20	C-6	PAR 46	Fig. 3	2	Lugs
H	4002	37.5–50	12.8–12.8	200–320	3.14–4.20	C-6/C-6	PAR 46	Fig. 4	3	Lugs
HX	4006	37.5	12.8	240	3.14	C-6	PAR 46	Fig. 3	2	Lugs
HX	4040	37.5–60	12.8–12.8	200–320	3.14–5.02	C-6/C-6	PAR 46	Fig. 4	3	Lugs
H	6012	50–40	12.8–12.8	200–320	4.20–3.36	C-6/C-6	PAR 56	Fig. 1	3	Lugs
H	6014	60–50	12.8–12.8	200–320	5.02–4.20	C-6/C-6	PAR 56	Fig. 1	3	Lugs
HX	6015	60–50	12.8–12.8	200–320	5.02–4.20	C-6/C-6	PAR 56	Fig. 1	3	Lugs
HX	6016	60–50	12.8–12.8	300–500	5.02–4.20	C-6/C-6	PAR 56	Fig. 1	3	Lugs

[a]Letter designations are defined as follows: H—sealed beam headlamp; X—heavy-duty; S—spot; F—fog.

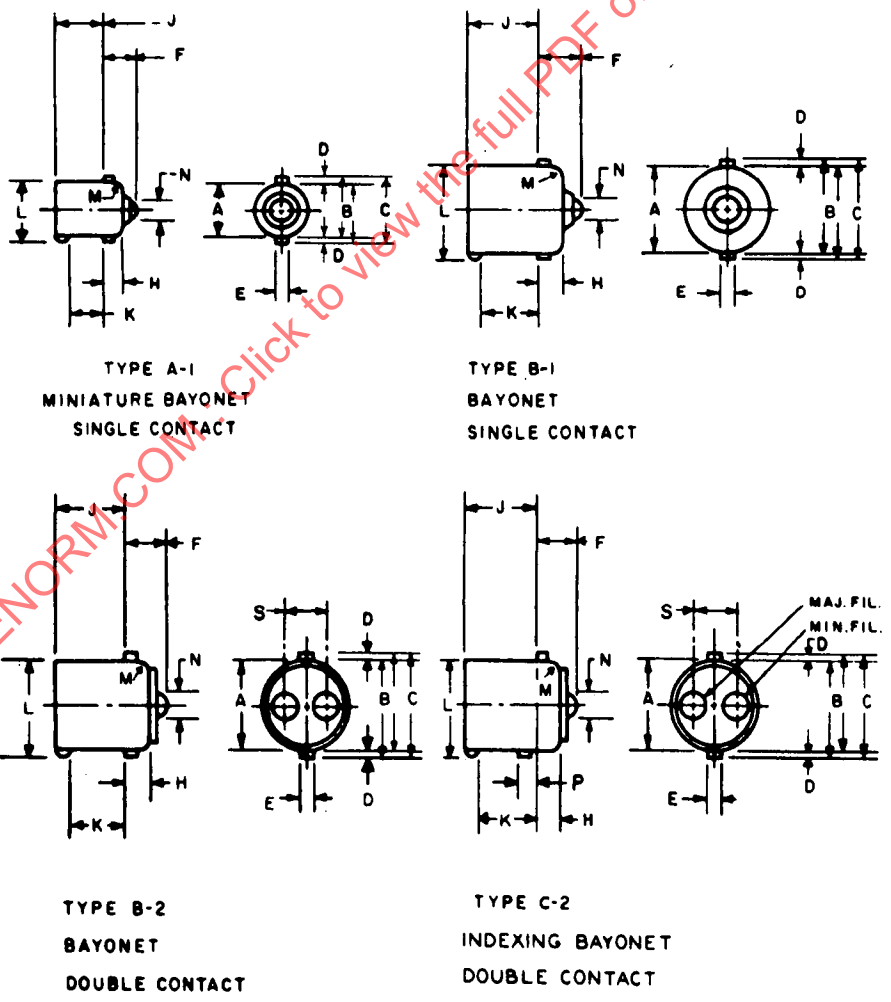
[b]All lamps designed for use on 12 V circuits are life tested at 14 V; in general, the life at average service voltages is longer.

[c]See SAE J571.

TABLE 4—BASE DIMENSIONS[a] (SEE FIG. 5)

Dimension	Miniature (A-1)				Bayonet (B-1, B-2, C-2)			
	in		mm		in		mm	
	Min	Max	Min	Max	Min	Max	Min	Max
A[b]	0.357	0.366	9.07	9.30	0.5925	0.6025	15.05	15.30
B	0.384	0.400	9.75	10.16	0.616	0.636	15.65	16.15
C	—	0.432	—	10.97	—	0.668	—	16.97
D	0.025	—	0.64	—	0.025	—	0.64	—
E	0.059	0.067	1.5	1.7	0.071	0.087	1.8	2.2
F	0.180	0.255	4.57	6.48	0.249	0.316[c]	6.32	8.02
H	0.095	0.131	2.41	3.33	0.138	0.17	3.51	4.32
J	0.300	—	7.65	—	0.492	—	12.50	—
K	0.180	—	4.75	—	0.350	—	8.89	—
L	—	0.41	—	10.4	—	0.64	—	16.3
M	0.03 nom	—	0.8 nom	—	0.03 nom	—	0.8 nom	—
N	0.16 nom	—	4 nom	—	0.19 nom	—	4.8 nom	—
P	—	—	—	—	0.117	0.133	2.97	3.38
S	—	—	—	—	0.255	0.279	6.48	7.09

[a] Apply to base on complete lamp bulbs.
[b] Both minimum and maximum to be measured with a gage. Applies to all parts of base shell except within 1/8 in (3.0 mm) from the bulb and base junction.
[c] On bases B-2 and C-2, heights of solder contacts are to be within 0.02 in (0.5 mm) of each other.



TYPE A-1
MINIATURE BAYONET
SINGLE CONTACT

TYPE B-1
BAYONET
SINGLE CONTACT

TYPE B-2
BAYONET
DOUBLE CONTACT

TYPE C-2
INDEXING BAYONET
DOUBLE CONTACT

FIG. 5—BASE TYPES