NOTICE OF ADOPTION

ADOPTION NOTICE 1
1 September 1993 for
SAE Standard J573-89
December 1989

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Note: Refer to Figure 1 for the engineering/logistics cross-reference data base.

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SURFACE VEHICLE STANDARD

SAE J573 | REV. DEC89

Issued 1978-03
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Submitted for recognition as an American National Standard

Superseding J573g

(R) MINIATURE LAMP BULBS

1. SCOPE:

Many of the lighting devices on motor vehicles are required and essential to operation on public roadways. To assure field replacement, it is important that the bulb types employed be readily available, when needed, in normal service channels. Therefore, this document 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 that require the employment of other types while achieving the desired performance.

Some of the design characteristics in this document are listed solely for the sake of standardization and have no bearing on how lamp bulbs perform in lighting devices on the highway.

2. DEFINITION:

2.1 ACCURATE RATED MINIATURE BULB: A bulb operated at design mean spherical candela (Table 2) and having its filament(s) within ±0.25 mm of nominal design position. This applies to No. 1156, 1157, 1157NA, 2057, and 2057NA only. (See Figure 1 for the spacing between the major and minor filaments of these bulbs.)

2.2 SEASONED BULB: A bulb that has been lighted at 1% of its average lab life, or 10 h maximum, whichever is shorter.

3. TESTS:

3.1 Samples for Test: Test samples shall be new, unused lamp bulbs fabricated from production processes.

4. REQUIREMENTS:

The test samples shall comply with the following requirements:

4.1 Candela: Seasoned bulbs shall be measured at design volts in a properly calibrated photometer in accordance with accepted photometric procedures. See Table 2 for candela requirements.

An acceptable seasoning schedule at rated volts is 1% of rated average lab life as shown in Table 1 or 10 h maximum, whichever is shorter. For lamp bulbs not listed in Table 1, use the manufacturer's published design life for rated average lab life.

4.2 Physical Dimensions:

4.2.1 Table 1 lists the bulb dimensions necessary to allow interchangeability.

4.2.2 Table 2 lists the electrical rating and physical locations of the filaments.

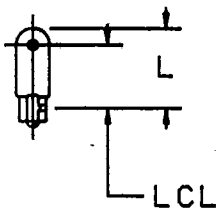
4.2.3 Table 3 lists the base dimensions considered important for metal based bulbs to insure that lamp bulbs will perform satisfactorily in a bulb retaining device (socket) made in accordance with SAE J567. Appendix A contains the following ANSI Standards:

Base Type/Description	ANSI Pub./Std. Sheet No.	IEC Designation
SAE A-1 Miniature Bayonet	C81.30,1-1	BA9s
SAE B-1 Candelabra Bayonet	C81.30,1-3	BA15s
SAE B-2 Candelabra Bayonet	C81.30,1-3	BA15d
SAE C-2 Candelabra Bayonet	C81.30,1-11	BAY15d

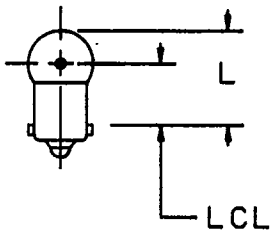
4.2.4 Table 4 lists the base dimensions considered important for wedge base (Type W-2) lamps to insure that the lamp bulbs will perform satisfactorily in a bulb retaining device (socket) made in accordance with SAE J567.

4.2.5 Table 5 lists the base dimensions considered important for subminiature wedge base (Type W-1) lamps to insure that lamp bulbs will perform satisfactorily in a bulb retaining device (socket) made in accordance with SAE J567.

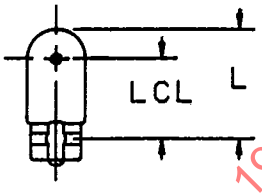
The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.



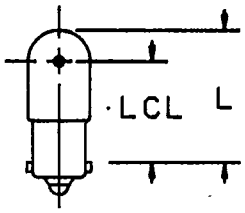
BULB T-1 3/4
BASE W-1



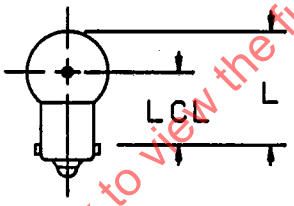
BULB G-3 1/2
BASE A-1



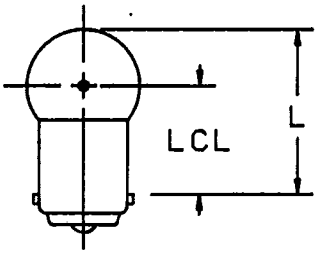
BULB T-3 1/4
BASE W-2



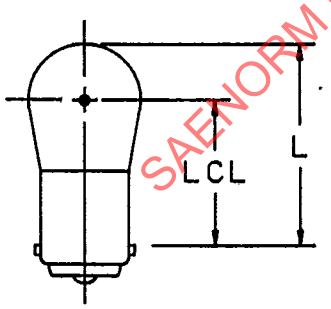
BULB T-3 1/4
BASE A-1



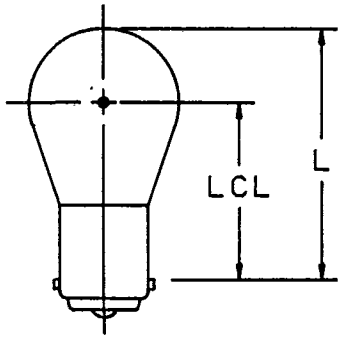
BULB G-4 1/2
BASE A-1



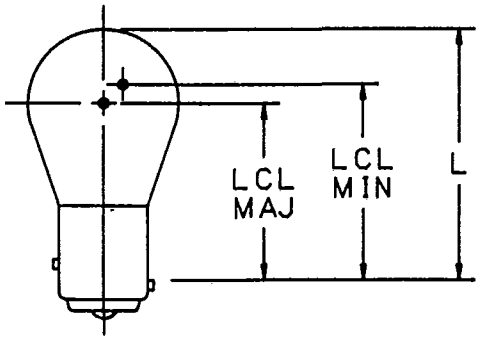
BULB G-6
BASE B-1, B-2



BULB B-6
BASE B-1, B-2

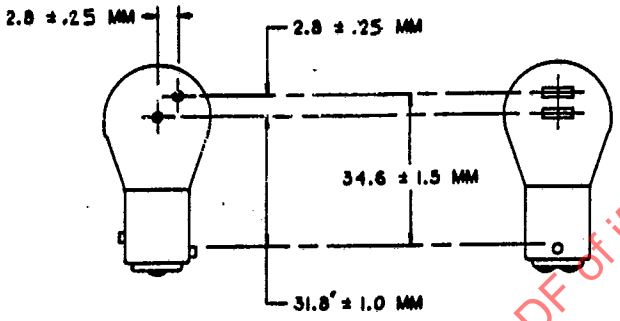


BULB S-8
BASE B-1, B-2



BULB S-8
BASE C-2

FIGURE 1 - Bulb Types



USE DIMENSIONS OF LOWER FILAMENT FOR 1156 BULB

FIGURE 2 - Bulb Filament Design Location

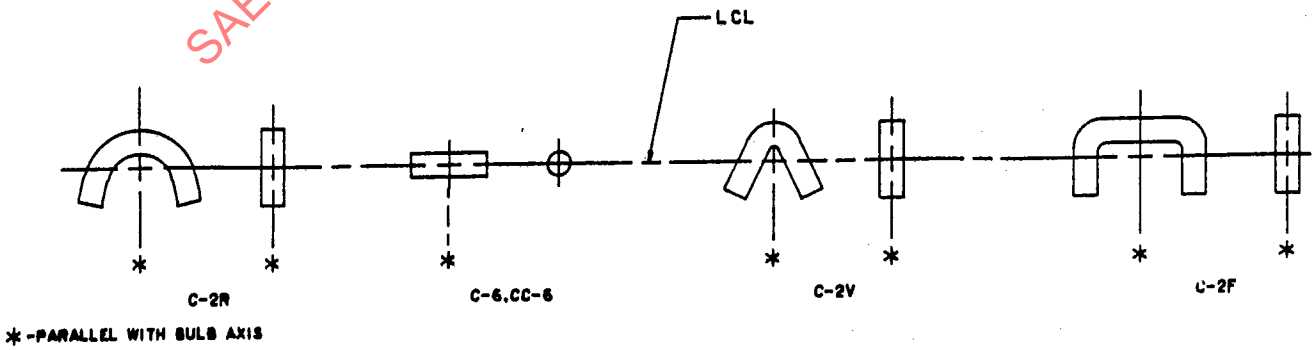


FIGURE 3 - Filament Types

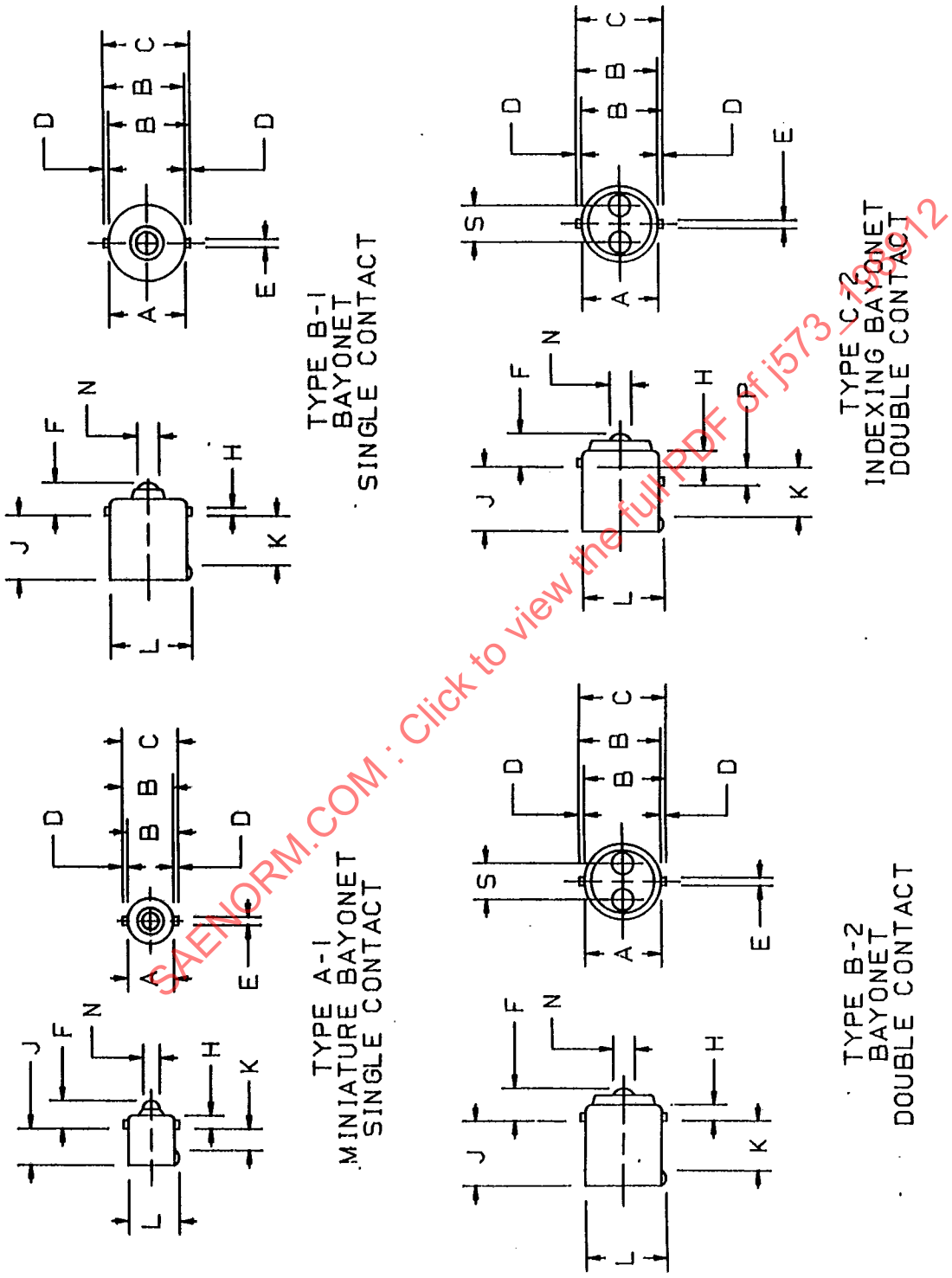


FIGURE 4 – Base Types

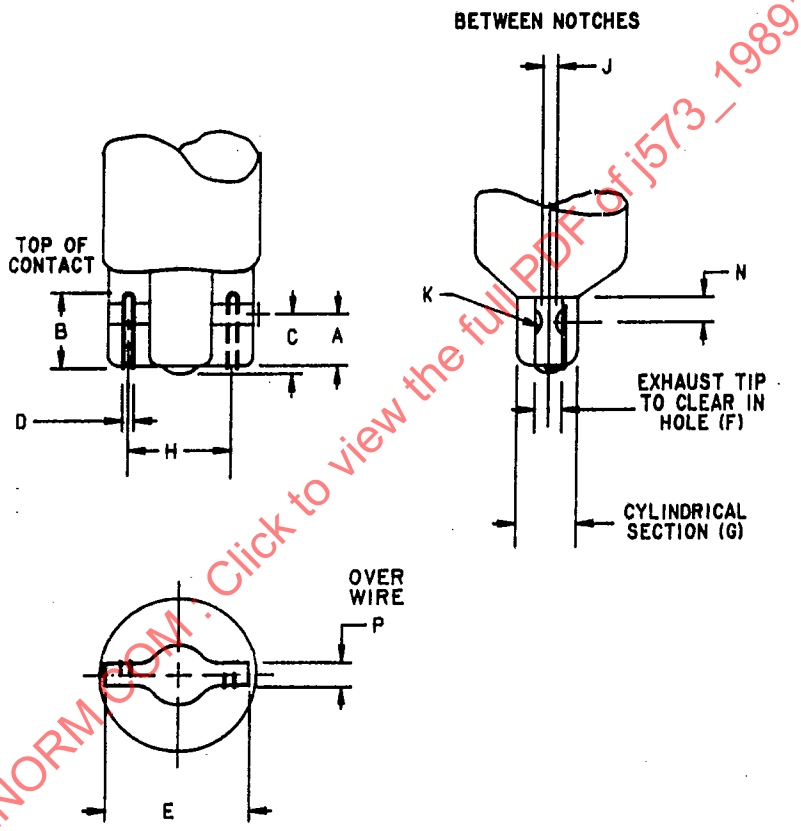
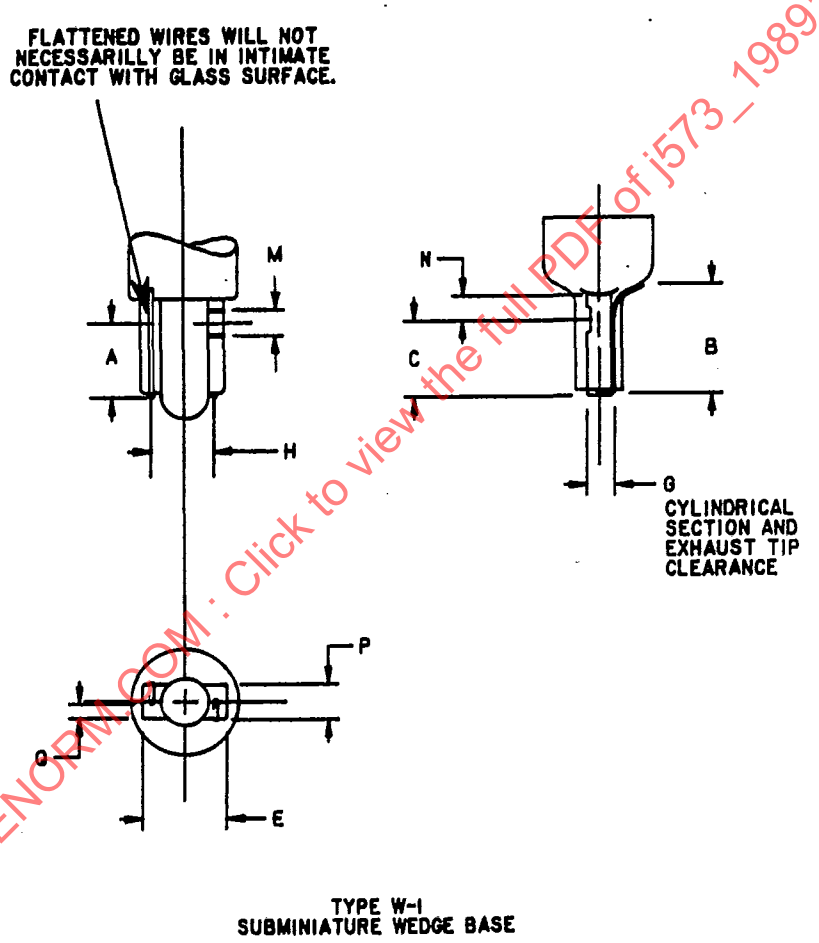


FIGURE 5 - Wedge Base Dimensions



TYPE W-1
SUBMINIATURE WEDGE BASE

FIGURE 6 - Subminiature Wedge Base Dimensions

TABLE 1 - Bulb Dimensions (See Figure 1)

Bulb	Base	Max Bulb Dia (D)		Max Exposed Length (L)	
		in	mm	in	mm
G - 3-1/2	A-1	0.460	11.7	0.700	17.8
T - 1-3/4	W-1	0.230	5.8	0.598	15.2
T - 3-1/4	W-2	0.405	10.3	0.815	20.7
T - 3-1/4	A-1	0.433	11.0	0.941	23.9
G - 4-1/2	A-1	0.590	15.0	0.843	21.4
G - 6	B-1, B-2	0.748	19.0	1.189	30.2
B - 6	B-1, B-2	0.775	19.7	1.469	37.3
S - 8	B-1, B-2	1.043	26.5	1.772	45.0
S - 8	C-2	1.043	26.5	1.772	45.0

See Table 2 for LCL dimensions and tolerances.

TABLE 2 - Typical Lamp Bulbs for Motor Vehicles

Typical[a] Service	Trade No.	Design: Mean Spherical Candela	Design: Cd Tol. ±%	Design: Volts	Design: Design Amps	Design: Amp Tol. ±%	Design: Rated Average Lab Life. H.	Design: Type[b]	Design: Light Center Length (LCL) in	Design: Light Center Length (LCL) mm	Design: LCL Tolerance ±in	Design: LCL Tolerance ±mm	Design: Axial Alignment Tolerance ±in	Design: Axial Alignment Tolerance ±mm	Bulb[c] Type	Data Base: Type[d]	Data Base: Designation
C	74	0.7	30	14.0	0.1	15	500	C-2F	0.402	10.2	0.040	1.0	0.040	1.0	T 1 3/4	W1	Sub-Min-Wedge
C	53	1	20	14.4	0.12	10	1000	C-2V	0.500	12.7	0.090	2.3	0.090	2.3	G 3 1/2	A1	Min Bay
C.M	57	2	20	14.0	0.24	10	500	C-2V	0.560	14.2	0.090	2.3	0.090	2.3	G 4 1/2	A1	Min Bay
C.M	1895	2	20	14.0	0.27	10	1500	C-2F	0.560	14.2	0.090	2.3	0.090	2.3	G 4 1/2	A1	Min Bay
T.P.M.L	67	4	15	13.5	0.59	8	2000	C-2R	0.811	20.6	0.090	2.3	0.090	2.3	G6	B1	SC Bay
T.P.M.L	97	4	15	13.5	0.69	8	2000	C-2V	0.811	20.6	0.090	2.3	0.090	2.3	G6	B1	SC Bay
C	161	1	20	14.0	0.19	10	1500	C-2F	0.560	14.2	0.090	2.3	0.090	2.3	T 3 1/4	W2	Wedge
C.M	168	3	20	14.0	0.35	10	1500	C-2F	0.560	14.2	0.090	2.3	0.090	2.3	T 3 1/4	W2	Wedge
C.M.T.L	194	2	20	14.0	0.27	10	1500	C-2F	0.560	14.2	0.040	1.0	0.060	1.5	T 3 1/4	W2	Wedge
D.S.B	1156	32	10	12.8	2.10	5	600	C-6	1.252	31.8	0.040	1.0	0.040	1.0	S8	B1	SC Bay[f]
P.S.T.D	1157	32	10	12.8	2.10	5	600	C-6	1.252	31.8	0.040	1.0	0.040	1.0	S8	C2	DC Bay
		3	12	14.0	0.59	8	2000	C-6		e		e		e			Index[f]
D.M.P	1157NA	24	30	12.8	2.10	5	600	C-6	1.252	31.8	0.040	1.0	0.040	1.0	S8	C2	DC Bay
		2.2	30	14.0	0.59	8	2000	C-6		e		e		e			Index[f]
P.S.T.D	2057	32	10	12.8	2.10	5	600	C-6	1.252	31.8	0.040	1.0	0.040	1.0	S8	C2	DC Bay
		2	12	14.0	0.48	8	5000	C-6		e		e		e			Index[f]
D.M.P	2057NA	24	30	12.8	2.10	5	600	C-6	1.252	31.8	0.040	1.0	0.040	1.0	S8	C2	DC Bay
		1.5	30	14.0	0.48	8	5000	C-6		e		e		e			Index[f]

[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]Filament types - see Figure 3

[c]Bulb types - see Figure 1

[d]Base types - see Figures 4, 5, and 6

[e]See Figure 2 for filament spacing and light center length

[f]Plane of pins with respect to filament is 90° ± 5

TABLE 3 - Base Dimensions[a] (See Figure 4)

Dim	Bayonet (A-1)				Bayonet (B-1, B-2, C-2)			
	inches		mm		inches		mm	
	Min	Max	Min	Max	Min	Max	Min	Max
A[b]	0.357	0.366	9.0	9.3	0.593	0.602	15.0	15.3
B	0.383	0.400	9.7	10.1	0.616	0.636	15.6	16.1
C	--	0.431	--	10.97	--	0.668	--	16.9
D	0.025	--	0.6	--	0.025	--	0.6	--
E	0.060	0.067	1.5	1.7	0.071	0.087	1.8	2.2
F	0.180	0.255	4.5	6.48	0.248	0.316	6.3	8.0[c]
H	0.095	0.131	2.4	3.33	0.138	0.170	3.5	4.3
J	0.300	--	7.6	--	0.492	--	12.5	--
K	0.180	--	4.5	--	0.350	--	8.8	--
L	--	0.409	--	10.4	--	0.642	--	16.3
M	0.031	--	0.8 NOM	--	0.031	--	0.8 NOM	--
N	0.157	--	4 NOM	--	0.189	--	4.8 NOM	--
P	--	--	--	--	0.117	0.133	2.9	3.3
S	--	--	--	--	0.255	0.280	6.4	7.0

[a]Apply to base on complete lamp bulbs.
[b]Both minimum and maximum to be measured with a ring gauge. Applies to all parts of base shell except within 3 mm from the bulb and base junction.
[c]On bases B-2 and C-2, heights of solder contacts are to be within 0.5 mm of each other.

TABLE 4 - Wedge Base Dimensions (See Figure 5)
Type W-2

Dimension	mm	
	Min	Max
A[a]	3.43	4.45
B	4.83	--
C	--	6.35
D	1.5 NOM	--
E	8.89	9.50
F	--	3.04
G	--	4.06
H	5.6 NOM	--
J	0.8 NOM	--
K[b]	0.8R NOM	--
P	1.90	2.41
N	1.65	--

[a]To be measured on longest side only with the wire in intimate contact with the bottom of the glass wedge.
[b]Optional construction, radius under wire not required, and dimension J becomes 1.2 nominal.

TABLE 5 - Subminiature Wedge Base Dimensions (See Figure 6)
Type W-1

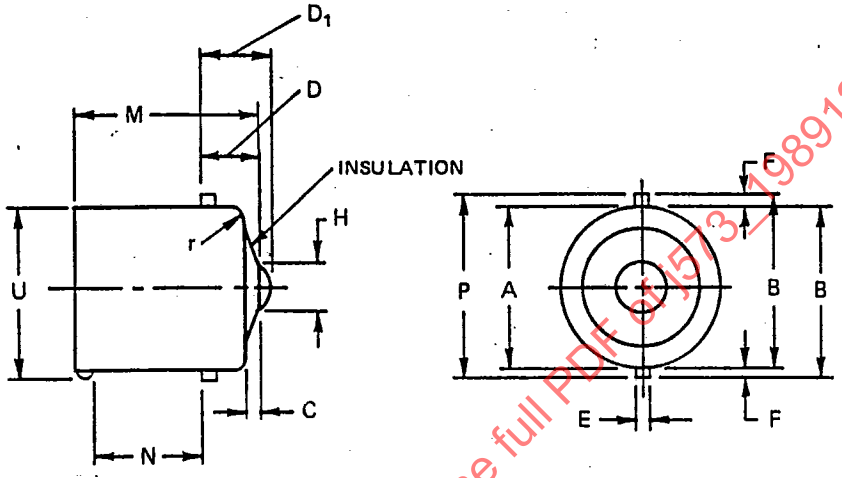
Dimension	mm	
	Min	Max
A[a]	2.03	3.04
B	3.05	5.08
C	--	5.08
E	4.83	5.08
G	--	3.10
H	3.3 NOM	--
P	1.78	2.20
N	1.65	--
M	1.5 NOM	--
Q	0.50	--

[a]To be measured on longest side only with the wire in intimate contact with the bottom of the glass wedge.

APPENDIX A

A.1 The designation assigned to this base by the International Electrotechnical Commission (IEC) is BA9. This base is fully compatible with IEC Publication 61.

Figure A1 is intended only to indicate the dimensions to be controlled.



Reference	Standard Dimension (millimeters) Unmounted* Min	Unmounted* Max	Finished Lamp Min	Finished Lamp Max	Nearest Equivalent (inches) Unmounted* Min	Unmounted* Max	Finished Lamp Min	Finished Lamp Max
A (Note 1)	9.08	9.20	9.08	9.25	0.357	0.362	0.357	0.364
B	9.75	10.11	9.75	10.16	0.384	0.398	0.384	0.400
C	1.50	–	–	–	0.059	–	–	–
D	4.30	5.20	–	–	0.169	0.205	–	–
D_1	–	–	4.30	5.90	–	–	0.169	0.232
E (Note 2)	1.50	1.70	1.50	1.70	0.059	0.067	0.059	0.067
F	0.64	–	0.64	–	0.025	–	0.025	–
H	3.50	4.00	3.50	4.00	0.138	0.157	0.138	0.157
M (Note 3)	12.90	13.30	–	–	0.508	0.524	–	–
N (Note 4)	4.50	–	4.50	–	0.177	–	0.177	–
P	–	10.95	–	11.00	–	0.431	–	0.433
U (Note 5)	–	–	–	10.41	–	–	–	0.410
(Note 6)	–	–	–	–	–	–	–	–

NOTES:

1. Bases may be made with a flare, with the diameter not to be more than 0.50 mm (0.20 in) greater than dimension A max.
2. On a finished lamp, the maximum pin diameter is checked in conjunction with the allowance for misalignment of pins. The "go" gage shown on Std Sheet X-X-X (under consideration) is used.
3. Dimension M lists the OAL limits of the BA9/13 base. For the BA9/14 base, the limits are 13.75 to 14.25 mm (0.541 to 0.561 in).
4. Dimension N denotes the minimum length of shell that shall conform to the limits of dimension A.
5. Dimension U includes allowance for side-solder. It is measured from opposite the barrel or the flare, if present.
6. Rounded edge recommended to aid insertion.

*These dimensions are solely for base design and are not to be gaged on the finished lamp.

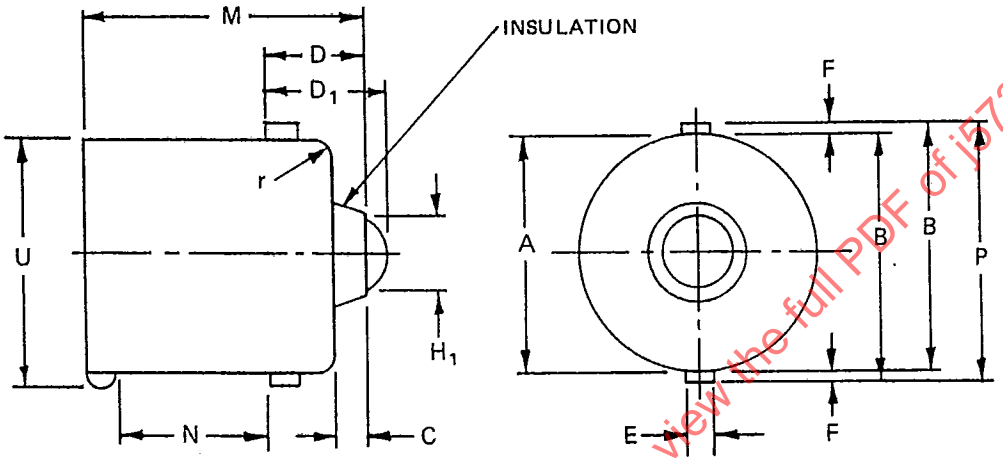
FIGURE A1

A.2 GAGING:

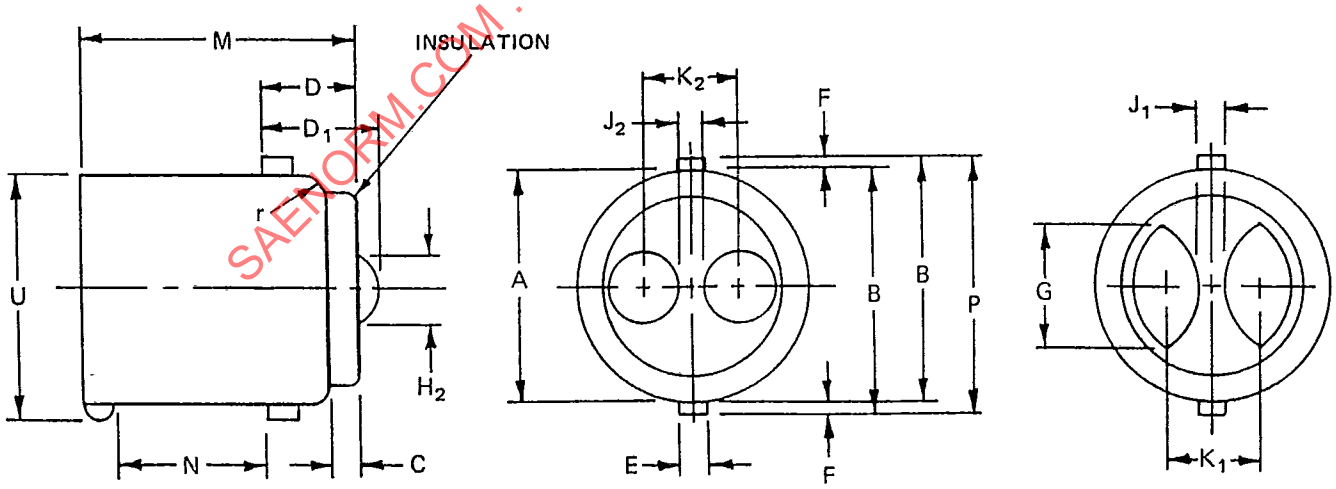
Finished lamps employing the BA9 base shall have dimensions such that they will meet the requirements of the gages shown on Std Sheets X-X-X (under consideration).

A.3 The designations assigned to variations of these bases by the International Electrotechnical Commission (IEC) are BA15s and BA15d. These bases are fully compatible with IEC Publication 61.

Figure A2 is intended only to indicate the dimensions to be controlled.



SINGLE CONTACT
BA15s



DOUBLE CONTACT
BA15d

OPTIONAL CONTACT
CONFIGURATION

FIGURE A2

Reference	Standard Dimension (millimeters)				Nearest Equivalent (inches)			
	Unmounted*		Finished Lamp		Unmounted*		Finished Lamp	
	Min	Max	Min	Max	Min	Max	Min	Max
A (Note 1)	15.05	15.25	15.05	15.30	0.5925	0.6004	0.5925	0.6025
B	15.65	16.10	15.65	16.10	0.616	0.634	0.616	0.636
C	1.50	–	–	–	0.059	–	–	–
D	6.00	6.60	–	–	0.236	0.260	–	–
D_1 (Note 2)	–	–	6.32	7.50	–	–	0.249	0.295
E (Note 3)	1.80	2.20	1.80	2.20	0.071	0.087	0.071	0.087
F	0.64	–	0.64	–	0.025	–	0.025	–
G	9.00 Nom		–		0.354 Nom		–	
H_1	4.50	5.20	–	–	0.177	0.204	–	–
H_2	4.50	–	–	–	0.177	–	–	–
J_1	3.00	–	–	–	0.118	–	–	–
J_2	1.70	–	–	–	0.067	–	–	–
K_1	7.00	8.00	–	–	0.276	0.315	–	–
K_2	6.50	7.10	–	–	0.256	0.280	–	–
M (Note 4)	18.75	19.25	–	–	0.738	0.758	–	–
N (Note 5)	8.90	–	8.90	–	0.350	–	0.350	–
P	–	16.95	–	17.00	–	0.667	–	0.669
U (Note 6)	–	–	–	16.26	–	–	–	0.640
r (Note 7)	–	–	–	–	–	–	–	–

NOTES:

1. Bases may be made with a flare, with the diameter not more than 1 mm (0.39 in) greater than dimension A.
2. On double circular[1] contact bases, the solder height of the two contacts shall be within 0.50 mm (0.20 in) of each other.
3. On a finished lamp, the maximum pin diameter is checked in conjunction with the allowance for misalignment of pins. The "go" gage shown on Std Sheet X-X-X (under consideration) is used.
4. Dimension M lists the OAL limits of the BA15/19 base. For the BA15/17.5 base, the limits are 17.25 to 17.75 mm (0.679 to 0.699 in), and for the BA15/21 base, the limits are 20.75 to 21.25 mm (0.817 to 0.837 in).
5. Dimension N denotes the minimum length of the shell that shall conform to the limits of dimension A.
6. Dimension U includes allowance for side-solder. It is measured from opposite the barrel or the flare, if present.
7. Rounded edge recommended to aid insertion.

*These dimensions are for base design only, and are not to be gaged on the finished lamp.

[1]Change approved by ANSI and IEC.

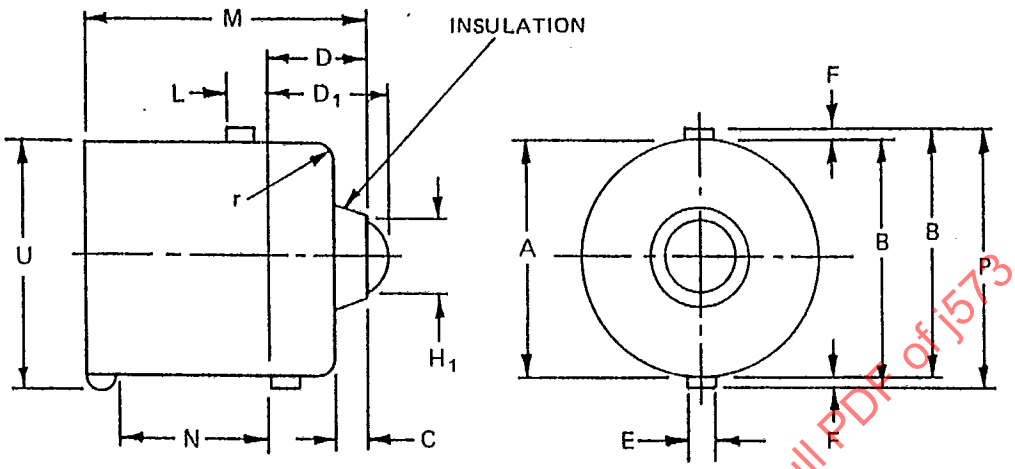
FIGURE A2 (Continued)

A.4 GAGING:

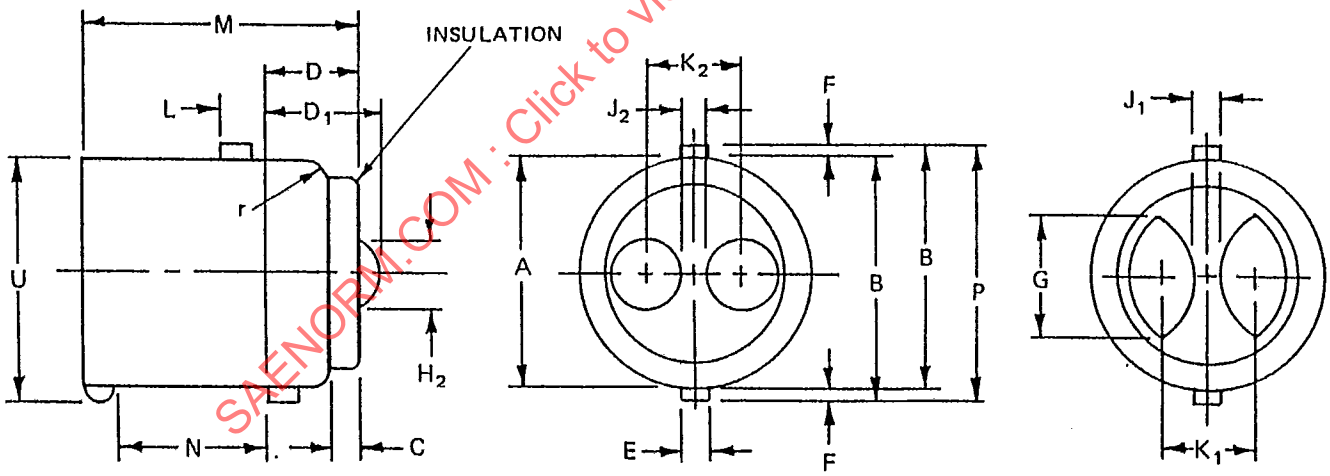
Finished lamps employing BA15 Candelabra Bayonet bases shall have dimensions such that they will meet the requirements of the gages shown on Std Sheets X-X-X (under consideration).

A.5 The designations assigned to variations of these bases by the International Electrotechnical Commission (IEC) are BAY15s and BAY15d. These bases are fully compatible with IEC Publication 61.

Figure A3 is intended only to indicate the dimensions to be controlled.



SINGLE CONTACT
BAY15s



DOUBLE CONTACT
BAY15d

OPTIONAL CONTACT
CONFIGURATION

FIGURE A3