Unofficial Translation

In the event of any doubt or misunderstanding arising from this translation, the standard in Thai will be held to be authoritative

TIS 4: Part 1-2529 (1986)
Thai Industrial Standard
For
Incandescent Lamps

1. Scope

1.1 This standard specifies types, classes and categories, dimensions and tolerances, components and manufacture, requirements, marking and labelling, sampling and criteria for conformity, and testing for pear-shaped lamps with clear or internally frosted bulb, screw or bayonet cap, a rated wattage ranging from 10 W to 1 000 W, and a rated voltage ranging from 110 V to 240 V for general lighting purposes.

2. Definitions

For the purpose of this standard, the following definitions apply:

2.1 FORCED TEST: Lamp burning by the voltage higher than the rated voltage to decrease testing period for life test

2.2 RATED WATTAGE: The wattage marked on the lamp expressed in watts.

2.3 LIGHT-CENTRE LENGTH : The distance from the geometrical centre of the filament to the contact plate of the cap, including solder.
This definition applies whichever type of cap is used.

2.4 INITIAL READING: The photometric and electric measurements made after a burning period of one hour.

2.5 RATED VOLTAGE: The voltage marked on the lamp expressed in volts.
Note. For lamps marked with dual voltage, the rated voltage refers to the mean of the voltages marked.

2.6 LUMEN: The unit of luminous flux equal to the flux emitted in a solid angle of one steradian by a uniform point source of one candela.

2.7 RATED LUMENS: The lumens marked on the lamps or indicated in other document having the unit in lumens.

2.8 LIFE: The number of hours a lamp operates to burn-out or to any other criterion of life performance specified in this standard.

3. Types, classes and categories

3.1 Types
Lamps specifies in this standard shall be classified into 2 types:
3.1.1 Bayonet cap type
3.1.2 Screw cap type

3.2 Classes
Lamps of both types shall be further divided into 2 classes:
3.2.1 Lamp of normal luminous flux
3.2.2 Lamp of high luminous flux

3.3 Categories
Each class of lamps shall be sub-classified into 2 categories:
3.3.1 Vacuum lamp
3.3.2 Gas-filled lamp

4. Dimensions and tolerances

4.1 Dimensions of lamps are as specified in Table 1.

5. Components and manufacture

5.1 Bulbs
5.1.1 Bulb shall be of glass and free from defects detrimental to use.
5.2 Caps
5.2.1 Cap dimensions are as specified in Appendix A.
5.2.2 Cap shell shall be of brass or other suitable materials.
5.3 Soldering
Soldering of contacts shall be made with appropriate amount of lead to ensure proper engagement of the cap in the holder.

Table 1
Dimensions for lamps
(clause 4.1)

Rated wattage	Cap	Diameter mm			Light-centre length mm		Overall length, max mm	
	(see dimensions	Bulb	Neck		Nominal	Tole-rance	Bayonet	Screw
W	In Appendix A)	max	min	max+			cap	cap
10		62	32	34	To be	± 3*	108.5	110
15		62	32	34	declared	± 3*	108.5	110
20		62	32	34	by the	± 3*	108.5	110
25	B22/25 X 26	62	32	34	manu-	± 3*	108.5	110
40	or E27/27	62	32	34	facturer	± 3*	108.5	110
60		62	32	34		± 3*	108.5	110
100		62	32	34		± 3*	108.5	110
150		82	32	40		± 4*	165	166.5
200	E27/27	82	32	-	121.5#	± 4*	-	166.5
300	E27/30	91	-	-	133	± 4*	-	184
300	E40/41	91	-	-	138	± 4*	-	189
300		111.5	49	-	178	± 5	-	240
500	E40/45	111.5	49	-	178	± 5	-	240
1000		151.5	49	-	225	± 8	-	309

Note. 1. +This value is applicable only to lamps with bayonet cap.
2. # This value is given as guidance for lighting fitting design. The actual value of the light-centre length is to be declared by the manufacturer.
3. * For internally frosted lamps, this tolerance shall be ± 5 mm.
4. The nominal light-centre length shall be subject to be reported to the Thai Industrial Standards Institute not less than 7 days before manufacturer.

6. Requirements

6.1 Electrical characteristics

6.1.1 Insulation resistance of bayonet caps

The insulation resistance between the shell of the bayonet cap and the contact shall not be less than 50 MΩ.

Compliance is checked by the test of clause 9.2.1.

6.1.2 Initial readings

6.1.2.1 Wattage tolerance

The initial wattage of individual lamps shall not exceed 104% of the rated watts given in Table 2A and 2B + 0.5 W.

6.1.2.2 Rated lumens

The rated lumens shall not be less than the values given in Table 2A and 2B.

6.1.2.3 Initial lumens tolerances

The initial lumens of individual lamps shall not be less than 93% of the rated lumens

Compliance is checked by the test of clause 9.2.2.

Table 2A
Minimum rated lumens for lamps of normal luminous flux
(clauses 6.1.2.1 and 6.1.2.2)

Rated voltage V	Rated wattage W											
	10	15	20	25	40	60	100	150	200	300	500	1000
	Rated lumens lm											
110	83	135	190	225	445	770	1420	2360	3250	5050	8900	19300
115	83	135	190	225	440	760	1420	2340	3250	5000	8900	19300
120	83	135	190	220	435	760	1400	2320	3250	5000	8800	19200
127	83	135	184	220	425	750	1380	2300	3200	4950	8800	19100
220	70	120	166	220	350	630	1250	2090	2920	4610	8300	18600
230	70	120	166	220	345	620	1240	2070	2900	4580	8250	18500
240	67	115	160	215	340	610	1230	2060	2880	4550	8200	18400

Table 2B
Minimum rated lumens for lamps of high luminous flux
(clauses 6.1.2.1 and 6.1.2.2)

Rated voltage V	Rated wattage W			
	25	40	60	100
	Rated lumens lm			
110	265	500	840	1580
115	265	500	840	1580
120	265	495	830	1560
127	260	490	820	1560
220	230	451	715	1350
230	230	415	710	1340
240	225	410	700	1330

Note. 1. Taking into account the high rate of development of lamps of high luminous flux exceeding 100 W, it is considered premature to include values for these lamps in the above table.

2. The underlined rated voltage is the voltage currently used in Thailand.

6.2 Mechanical characteristics

6.2.1 Torsion

The lamp caps shall withstand a torque specified in Table 3 before and after life test.

Compliance is checked by the test of clause 9.3.1.

Table 3
Torque
(clauses 6.2.1 and 9.3.1)

Cap	Torque Nm
E27 and B22 E40	3 5

6.3 Life

6.3.1 The lamp average life shall comply with the table below.

Test quantity	Minimum average life hours
10 to 15 16 to 24 25 to 249 250 and over	920 960 980 1000

6.3.2 Each lamp shall have a life not less than 700 hours (see clauses 8.3.1.3 and 8.3.2.3).

6.3.3 Each lamp shall have a ratio of luminous flux at 750 hours to the initial luminous flux after one hour burning, expressed as percentage, not less than the value given in Table 4.

Compliance is checked by the test of clause 9.4.

Table 4
Luminous flux ratio
(clause 6.3.3)

Rated wattage W	Luminous flux ratio at 720 hours %	
	Rated voltage from 110 to 127 V	Rated voltage from 220 to 240 V
10 to 25 40 to 200 300 to 500 1000	72 85 80 70	74 85 85 80

Note. If a lamp does not comply with clause 6.3.3, it shall be considered to have failed at 690 hours.

6.4 Lamp cap temperature rise

6.4.1 Lamp cap temperature rise in batch testing shall not exceed the values given in Table 5.

6.4.2 Lamp cap temperature rise in whole product testing shall not exceed the values given in Table 6.

Compliance is checked by the test of clause 9.5.

Table 5
Lamp cap temperature rise: batch test
(clauses 6.4.1 and 8.3.1.4)

Rated wattage	Maximum temperature rise °C			
	Individual value for first 5 lamps		Average value for all 20 lamps	
W	B22	E27	B22	E27
60	125	120	134	128
100	135	130	145	139
150	135	130	145	139
200	-	130	-	139
300	-	130	-	139

Table 6
Lamp cap temperature rise: whole production test
(clauses 6.4.2 and 8.3.2.4)

Rated wattage	Maximum temperature rise, °C (average of 20 lamps)	
W	B22	E27
60	128	123
100	138	133
150	138	133
200	-	133
300	-	133

7. Marking and labelling

7.1 There shall be at least figure, letter or mark indicating the following information clearly and legibly on each lamp.

(1) Rated voltage in colts, marked by V
(2) Rated wattage in watts, marked by W
(3) Batch identification
(4) Name of manufacturer, factory or trade mark

7.2 There shall be at least figure, letter or mark indicating the following information clearly and legibly on the container.

(1) Rated voltage in colts, marked by V
(2) Rated wattage in watts, marked by W
(3) Rate lumens in lumens, marked by lm
(4) Batch identification
(5) Type of the lamps (bayonet or screw type) which may be indicated by picture
(6) Bulb (clear or internally frosted)
(7) Name of manufacturer, factory or trade mark

7.3 In case foreign language is used, the meaning shall correspond to that in Thai specified above.

7.4 Any person who manufactures products complying with this standard may use the Standards Mark in connection with his products only after having received a licence from the Thai Industrial Product Standards Council.

8. Sampling and criteria for conformity

Unless otherwise agreed upon, the sampling and criteria for conformity shall be as follows:

8.1 Definitions

8.1.1 Type: Lamps, independent of the type of cap, which are identical in photometric and electric rating

8.1.2 Batch: All lamps of one type and composition which are manufactured under the same condition and in one continuous run.

8.1.3 Group: Lamps of the rated wattage from the same luminous flux whose rated voltage falls within the same range of 110 V - 127 V or 220 V - 240 V

8.1.4 Inspection test quantity: The number of lamps selected at random for test on dimension, components and manufacture, insulation resistance of bayonet caps, mechanical characteristics, and marking and labelling

8.1.5 Rating test quantity: The number of lamps selected at random for test of initial readings

8.1.6 Life test quantity: The number of lamps selected at random for test of life

8.2 Sampling

8.2.1 General requirements

8.2.1.1 Suggested method of selection is given in Appendix C.

8.2.1.2 In order to cover the risk of accidental breakage, a certain number of lamps, in addition to the test quantity, shall be selected and tested. These lamps shall only substitute lamps of the test quantities, if necessary to make up the required quantities of lamps for the test.

8.2.1.3 If the number of samples to be tested is sufficient and the test results show conformity to the requirements, it is not necessary to test the additional samples taken.

Note. Accidentally broken lamps include for example lamps becoming defective during handling and transportation and also lamps becoming defective for reasons which are not connected with a normal procedure of testing for the measurement of lumens and wattage according to clause 9.4.

8.2.2 Test quantity for each individual batch

8.2.2.1 Inspection test quantity

There shall be selected an inspection test quantity consisting of 35 lamps, in special case* 70 lamps.

8.2.2.2 Rating test quantity

From the lamps which have passed the inspection test, there shall be selected at random a rating test quantity comprising 25 lamps, in special case* 50 lamps.

8.2.2.3 Life test quantity

From the lamps which have passed the rating test, there shall be selected at random a life test quantity comprising 20 lamps.

8.2.2.4 Test quantity of lamps cap temperature rise

The samples subjected to the test of clause 8.2.2.3 shall be used.

Note. *Special case means:

(1) When newly designed lamps which have never been made before are produced.

(2) When a batch consists of lamps of both bayonet and screw caps.

(3) When a batch consists of a large number of lamps.

8.2.3 Test quantity for whole product of a manufacturer

8.2.3.1 Inspection test quantity

Samples shall be selected at random at regular intervals during a period of 12 months. The sample size shall be between 600 and 650.

8.2.3.2 Rating test quantity

From the lamps which have passed the inspection test, there shall be selected at random a rating test quantity of between 500 and 540 lamps. Care shall be taken to ensure that the rating test quantity is sufficiently representative of the types included in the inspection test quantity.

8.2.3.3 Life test quantity

From the lamps which have passed the rating test, there shall be selected at random a life test quantity of between 250 and 270 lamps.

Care shall be taken to ensure that the life test quantity insufficiently representative of the types included in the inspection test quantity and rating test quantity.

Note. Before life tests the samples shall be selected at random according to clause 8.2.3.4 for cap temperature rise test.

8.2.3.4 Test quantity of lamp cap temperature rise

Twenty lamps for a type shall be selected at random for lamp cap temperature rise test.

Note. For purposes of temperature rise tests of a lamp cap, it is necessary for samples of a single type to have the same type of cap.

8.3 Criteria for conformity

Before making the test, it should first be ascertained that the rated lumens displayed on the lamp or in the catalogue (if available) comply with the requirements of clause 6.1.2.2.

8.3.1 Compliance of individual batch

A batch shall be considered as satisfying the requirements of this standard if the requirements contained in clauses 8.3.1.1, 8.3.1.2, 8.3.1.3 and 8.3.1.4 are fulfilled. If the samples fail to satisfy the requirements of any of these clauses, they shall be deemed not to comply with this standard.

8.3.1.1 Compliance checked by inspection

A batch shall be deemed to comply with the requirements if the number of failure does not exceed the acceptance number given in Table 7.

The failure under clauses 5.2, 6.1.1 and 6.2 are defined as the sum of lamps failing to satisfy the requirements of clause 5.2 both during the inspection and at the end of life test, and those failing to satisfy the requirements of clauses 6.1.1 and 6.2.

Table 7
Compliance checked by inspection: batch test
(clause 8.3.1.1)

Sample size lamps	Acceptance number	Test item
35 70*	3 5	For any test grouping according to clause 4.1, clause 5.1, clauses 5.2, 6.1.1 and 6.2, clause 5.3 and clause 7
35 70*	7 12	For all tests according to clause 4.1, clause 5.1, clauses 5.2, 6.1.1 and 6.2, clause 5.3 and clause 7 combined

Note. *Special case (see Note to clause 8.2.2).

8.3.1.2 Compliance checked by rating test

A batch shall be considered to comply if:

(a) The number of lamps with wattage above the maximum value specified in clause 6.1.2.1 does not exceed the acceptance number given in Table 8.

(b) The number of lamps with lumens values below the minimum values specified in clause 6.1.2.3 does not exceed the acceptance number given in Table 8.

Table 8
Compliance checked by rating test: batch test
(clause 8.3.1.2)

Sample size lamps	Acceptance number
25 50*	7 4

Note. *Special case (see Note to clause 8.2.2).

8.3.1.3 Compliance checked by life test

A batch shall be considered to comply if:

(a) The average life of the life test quantity attains the values set out in clause 6.1.2.1.

(b) The total number of lamps having lives shorter than 700 hours, together with those failing to pass the requirements for luminous flux at 750 hours for individual lamps, set out in clause 6.3.2 does not exceed 4.

8.3.1.4 Compliance checked by lamp cap temperature rise test

A batch shall be considered to comply if:

(b) The Δt_s of each of the 5 lamps does not exceed the value given in Table 5.

(b) In case the Δt_s is exceeded for one (or more) of the 5 lamps, the remaining 15 lamps shall be tested and the average cap temperature rise of the total 20 lamps shall not exceed the value in Table 5.

8.3.2 Compliance of whole production

Where the whole production is being tested over a period of 12 months, the complete test quantity shall be in accordance with clauses 8.3.2.1, 8.3.2.2, 8.3.2.3 and 8.3.2.4. The whole production of a manufacturer shall be deemed to comply if at least 75% of the total number of types submitted for test meet the requirement and the number of lamps failing does not exceed the acceptance numbers shown in Table 12.

8.3.2.1 Compliance checked by inspection

The whole production shall be deemed to comply if the number of lamps failing does not exceed the acceptance number shown in Table 9.

The failure under clauses 5.2, 6.1.1 and 6.2 are defined as the sum of lamps failing clauses 5.2.1, 6.1.1 and 6.2 together with those failing clause 5.2.2 during inspection and at end of life test.

Table 9
Compliance checked by inspection: whole production test
(clause 8.3.2.1)

Sample size lamps	Acceptance number		Test items
	for any test grouping	for all tests combined	
600	31	91	Clause 4.1, clause 5.1, clauses 5.2, 61.1.1 and 6.2, clause 5.3, and clause 7
601 to 606	32	92	
607 to 613	32	93	
614 to 620	32	94	
621 to 626	33	95	
627 to 633	33	96	
634 to 640	33	97	
641 to 646	34	98	
647 to 650	34	99	

8.3.2.2 Compliance checked by rating test

The whole production shall be deemed to comply if:

(a) The number of lamps with wattage above the maximum value specified in clause 6.1.2.1 does not exceed the acceptance number shown in Table 10.

(b) The number of lamps with lumen values below the minimum values specified in clause 6.1.2.3 does not exceed the acceptance number shown in Table 10.

Table 10
Compliance checked by rating test: batch test
(clause 8.3.2.2)

Sample size lamps	Acceptance number
500	52
501 to 510	53
511 to 520	54
521 to 530	55
531 to 540	56

8.3.2.3 Compliance checked by life test

The whole production shall be deemed to comply if:

(c) The average life obtained from the sample size for life test quantity attains the values set out in clause 6.3.1.

(b) The total number of lamps having lives shorter than 700 hours, together with those failing to pass the requirements for luminous flux at 750 hours for individual lamps, set out in clause 6.3.2 does not exceed the acceptance number shown in Table 11.

Table 11
Compliance checked by life test: whole production test
(clause 8.3.2.3)

Sample size lamps	Acceptance number
250	27
251 to 260	28
261 to 270	29

Table 12
Condition of failures
(clause 8.3.2)

Test item	Acceptance number
Any grouping of tests according to clause 4.1, clause 5.1, clauses 5.2, 6.1.1 and 6.2, clause 5.3, and clause 7	(5% of test quantity + 1 lamp)*
All tests according to clause 4.1, clause 5.1, clauses 5.2, 6.1.1 and 6.2, clause 5.3, and clause 7 combined	(15% of test quantity + 1 lamp)*
Initial wattage	(10% of test quantity + 2 lamp)*
Initial lumen	(10% of test quantity + 2 lamp)*
Cap temperature rise	see clause 6.4
Life	See clause 6.3
Life below 700 hours	(10% of test quantity + 2 lamp)*

Note *When the calculation result is fractional number of samples, this is replaced by the next higher whole number.

8.3.2.4 Compliance checked by cap temperature rise test

The whole product of a manufacturer shall be deemed to comply if the average Δt_s of the 20 lamps does not exceed the value specified in Table 6.

8.3.3 Specific failures during life testing

In either batch or whole product testing, the test quantity of lamps, when tested in the normal operating position and at the specified test voltage, shall be deemed not to conform to the requirements if more than 1 lamp out of 20 fails in a manner which causes:

(a) Breakage of the glass bulb

(b) Rupture of a fuse external to the lamp

Note. The test results are very dependent on the internal impedence of the supply circuit and on the characteristics of the fuse. This requirement may, therefore, not be applied rigorously before these characteristics have been fully defined. The intention is to define more explicity the characteristics of an appropriate fuse and the characteristics of a power supply representative of expected service conditions. For lamps of 25 W to 200 W and a rated voltage above 200 V, a fuse rated at 10 A would probably be used.

9. Testing

9.1 Test conditions

9.1.1 Position of burning

9.1.1.1 Lamps shall burn in a vertical position, cap up. The lampholder axis on the test-racks shall not deviate from the vertical by more than 5°

9.1.1.2 Lamps shall burn free from noticeable vibrations. No vibrations or shocks should be perceptible when touching the lampholders either during burning or when switching on or off.

9.1.2 Lampholders

9.1.2.1 Lampholders on life-test racks shall be of sturdy construction and shall be designed to ensure adequate electrical contact and to prevent overheating.

9.1.2.2 The voltage drop between the point of measurement of the supply line and the cap contacts shall not exceed 0.1% of the test voltage.

9.1.2.3 For bayonet lampholders the cap shell shall be substantially at the same potential as the contact which is not connected to the fused main supply lead.

9.1.2.4 The torque imposed on insertion or extraction of the lamp must not exceed the values specified in clause 6.2.

9.1.2.5 The cap temperature in operation shall not exceed 210°C

9.1.2.6 Lamps shall not be operated at excessive ambient temperatures, neither shall there be undue heating of a lamp by others.

9.1.3 Before the initial readings are taken, lamps shall be aged for approximately 1 hour at the rated voltage.

9.2 Electrical requirements

9.2.1 Insulation resistance of bayonet cap

Testing shall be carried out immediately after burning.

Reading shall be taken after a direct current of 500 V has been supplied for one minute.

9.2.2 Initial readings

The wattage and lumen shall be measured at the rated voltage.

9.3 Mechanical characteristics

9.3.1 Torsion

The torsion test shall be carried out using the special holders shown in Appendix B. The torque shall not be applied suddenly, but shall be increased continuously from zero to the value specified in Table 3. The torsion test shall be carried out both before and after the life test.

9.4 Life performance

9.4.1 The test voltage shall be a stable voltage between 100% and110% of the rated voltage.

The monetary fluctuations from the test voltage during the life test shall not exceed ±1% and the effective mean value of the voltage during the life test shall be taken for the computation. The equivalent life for rated volts shall be determined in accordance with the following equation

$$L_O = L\left(\frac{U}{U_O}\right)^n$$

Where L_O is life at rated voltage
L is equivalent life at test voltage
U_O is rated voltage
U is average effective voltage during life test
n is 13 for vacuum lamps and 14 for gas-filled lamps

The lamps shall be burned on alternating current at a frequency of a nominal value between 40 Hz and 60 Hz.

9.4.2 Switching on and off
Lamps shall be switched off twice daily for periods of not less than 15 minutes, such periods not being considered as part of the burning hours of the lamp.

9.4.3 Accidentally broken lamps during life test
The lamp accidentally broken before 1200 hours or the equivalent when forced testing shall be replaced, if necessary, by a new lamp and the test result shall be discarded.

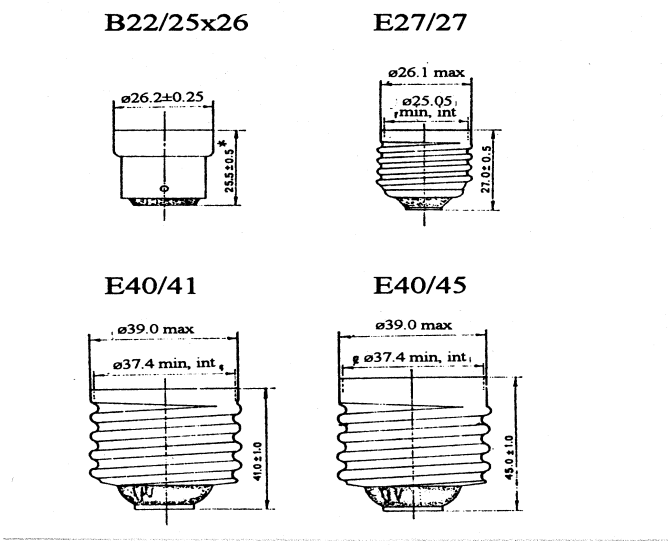
9.4.4 Measurement during life test
Lamps subjected to the life test shall be measured for lumens and watts, at the rated voltage, at 750 ± 25 hours or its equivalent in case of forced testing.

9.4.5 Termination of test
The life test shall be considered to have terminated at 1250 hours, of its equivalent in case of forced testing.

9.5 Cap temperature rise
The cap temperature rise test shall be in accordance with TIS 4, Part 2: "Method of measurement of lamp cap temperature rise".

Appendix A
Lamp cap
(Table 1, clauses 5.2.1 and 5.3)

A.1 The dimensions of caps B22, E27 and E40 shall be in accordance with Figure A.1. Details of cap B22 shall be in accordance with Figure A.2 and caps E27 and E40 with Figure A.3.



Caps may be made with a flare, the diameter of which shall not be more than 1 mm greater than the maximum permissible diameter of the corresponding cap without a flare.

For finished lamps the creeping distance over insulation shall not be less than the following values:

3 mm between live parts and at least 2.5 mm between live parts and metal cap of caps B22/25 X 26.

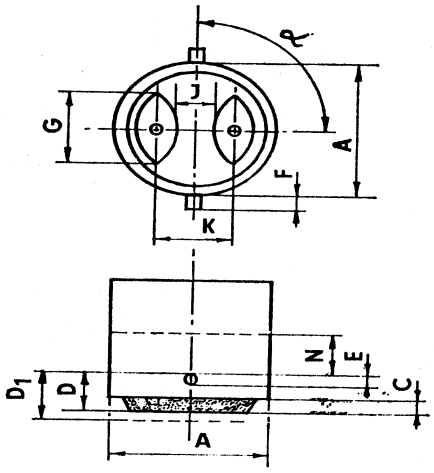
3 mm for caps E27/27.

5 mm for caps E40/45 and E40/41.

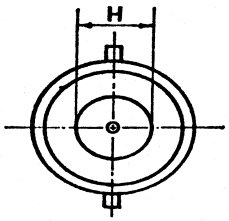
Note. These dimensions are solely for cap design and are not to be gauged on the finished lamp.

Figure A.1 Dimensions of caps B22, E27 and E40 to be controlled
(clause A.1)

B22d



B22s



Other dimensions as in B22d

Dimension	A	C	D**	D_1**	E	F	G#	H#	J#	K	N+	α
max	22.15	-	7.00*	8.00	2.20	2.70	-	approx	-	11.30*	-	97°.30'
min	21.75	1.50	6.00	-	1.80	2.30	10.00	10.00	4.00	10.00*	6.70	82°.30'

Note.* These dimensions are solely for cap design and are not to be gauged on the finished lamp.

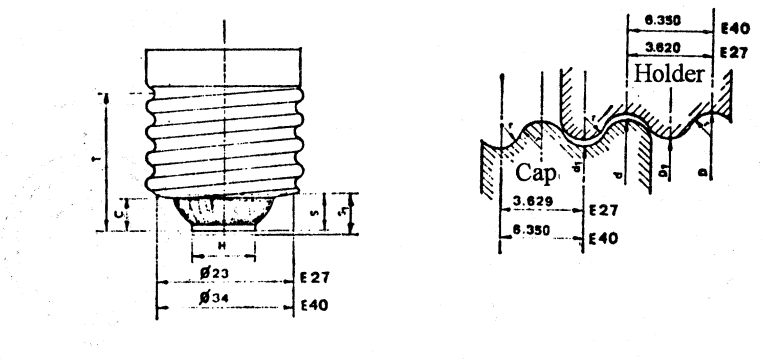
** D without solder; D_1 with solder

To be checked with a millimetre scale.

+ "N" denotes the minimum length to which dimension "A" must conform.

Figure A.2 Caps B22
(clause A.1)

E27 and E40



Units in millimetres

Dimension		E27		E40	
		min	max	min	max
Cap	C	3.50	-	-	-
	H#	9.50	11.50	14.00	18.00
	S**	7.00	8.00	8.00	9.00*
	S_1**	-	8.50	-	10.00
	T+	22.00	-	34.00	-
	d	26.15	26.45	39.06	39.50
	d_1	23.96	24.26	35.45	35.90
Holder	D	26.55	26.85	39.60	40.05
	D_1	24.36	24.66	36.00	36.45
r radius		1.025		1.850	

Note.* These dimensions are solely for cap design and rare are not to be gauged on the finished lamp.

** S without solder; S_1 with solder

To be checked with a millimetre scale.

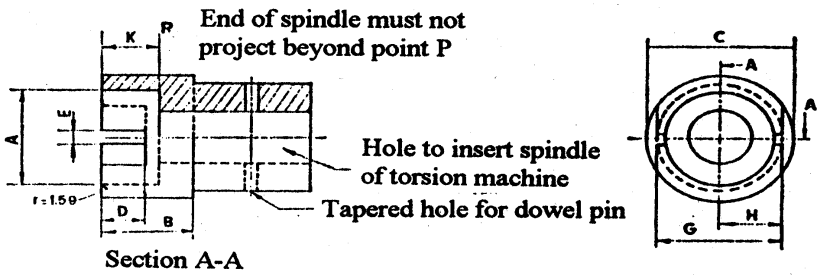
+ "T" is the distance from the contact place to the completion of the thread.

Figure A.3 Caps E27 and E40
(clause A.1)

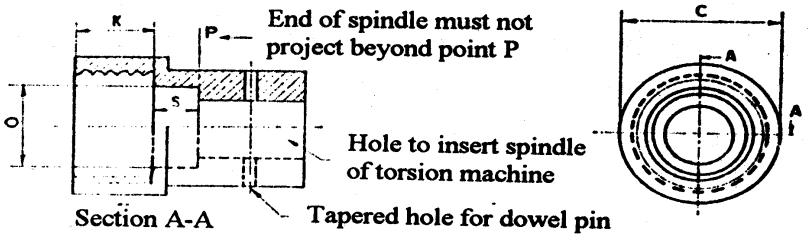
Appendix B
Holders for torsion test
(clause 9.3)

B.1 The holders for torsion test shall be in accordance with Figure B1 and Table B1.

For bayonet cap B22



For screw caps E27 and E40



Units in millimetres

Figure B.1 Holders for torsion test
(clause B.1)

Table B.1
Dimensions of holders for torsion test
(clause B.1)

Reference letter	Dimension			Tolerance
	B22	E27	E40	
A	22.17	-	-	+0.03
B	19.05	-	-	±0.3
C	28.57	33.02	47.62	±0.3
D	9.52	-	-	±0.3
E	3.00	-	-	+0.17
G	24.61	-	-	±0.3
H	12.30	-	-	±0.3
K	12.70	10.92	19.05	±0.3
O	-	23.01	34.04	±0.3
S	-	11.68	12.95	±0.3

Note. For thread dimensions, see Appendix A.

Appendix C
Suggested method of selection
(clause 8.2.1.1)

The following method of selection is limited to lamps up to 200 W. The test quantities for lamps of ratings above 200 W shall be agreed upon by the purchaser and the manufacturer.

C.1 Individual batches

C.1.1 Batches consisting of 1000 lamps or less

For batches consisting of 10 or less containers, lamps shall be selected from every container. For batches consisting of more than 10 containers, lamps shall be selected from at least one-half of the total number of containers in the batch, with a minimum of 1 container.

C.1.2 Batches consisting of more than 1000 lamps

For batches consisting of more than 1000 lamps, lamps shall be selected from at least one-third of the total number of containers in the batch, with a minimum of 10 containers.

C.2 For whole production, selection is in connection with clause 8 as follows:

C.2.1 The lamps selected shall be taken from lamp groups which collectively represent, as nearly as possible, 75% of the annual production of general lighting service lamps.

C.2.2 From each of the four main groups, lamps of the types with the highest production percentage shall be selected for the inspection test quantity at the rate of 60 or more per type. From each of the other groups making up the 75% of the production of the year, lamps shall be selected for the inspection test quantity any of the types at the rate of not less than 24 or more than 60.

Note. In each type, lamps retained for the rating test quantity represent practically 5/6 of the inspection test quantity and the lamps retained for the life test quantity represent 1/2 of the rating test quantity, the selection being taken at random for each type.

C.2.3 An attempt shall be made to maintain a proportion between the total number of lamps selected for a group and the relative importance of the group.

C.2.4 For each type, testing quantities should be distributed as evenly as possible throughout a period of 12 consecutive months.