

ANSI_IEC C81.63-2004

Revision and Consolidation of ANSI C81.63-1991

American National Standard

Gauges for Electric Lamp Bases and Lampholders

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American National Standard

Approved: January 16, 2004 Secretariat: ANSLG-- National Electrical Manufacturers Association

Gauges for Electric Lamp Bases and Lampholders

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Foreword

(This foreword is not part of American National Standard ANSI_IEC C81.63-2004)

In 1990 and 1991 the American National Standards for lamp bases, lampholders and gauges were split into three separate standards to line up with the IEC format. ANS C81.61, ANS for Electric Lamp Bases paralleled IEC 60061-1; ANS C81.62, ANS for Lampholders for Electric Lamps paralleled IEC 60061-2 and ANS C81.63, Gauges for Electric Lamp Bases and Lampholders paralleled IEC 60061-3. Also a fourth standard, ANS C81.64 Guidelines for Electrical Lamp Bases, Lampholders and Gauges was published to parallel IEC 60061-4 in 1993.

In 1996, the first IEC data sheets were adopted "as is" as Nationally Acknowledged International Standards and published as Supplement g to the existing C81.61, 62 and 63 standards. Now many more (if not most) ANSI gauge standard sheets are IEC sheets adopted as ANSI standards.

Accordingly, this revision and consolidation of ANSI C81.63 is being issued to include, first, a reference to all IEC gauge standard sheets adopted as ANSI standards. These are listed in Table I. Second, standard sheets for a small number of gauges used mainly in North America or not harmonized with IEC are found in Part II. Part III contains any United States deviations to the IEC standard sheets, which have been adopted as Nationally Acknowledged International Standards that are published in IEC 60061-3. Part IV contains an informative annex on first versus third angle projection and related standards

Information concerning the approval of this standard is based on the documents listed in the table below:

Revision and Consolidation	CDV	RV
2nd New Edition	C81_2590	C81_2591

Charles Chase, **Chairman, ASC C81**
A.C. Rousseau, **Technical Coordinator**
Elaine M. Littlefield, **Assistant Technical Coordinator**
Bernie W. Rachel **Technical Editor**
Randolph N. Roy, **Senior Editor**
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American National Standard	**ANSI_IEC C81.63-2004**

Gauges for Electric Lamp Bases and Lampholders

PART I - General Information and Requirements

1 Scope

This standard sets forth the specifications for gauges for bases (caps) and lampholders for electric lamps.

2 Normative references

The following publications contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the publications indicated below.

ANSI_IEC C81.61-2003, *Bases (Caps) for Electric Lamps*
ANSI_IEC C81.62-2003, *Lampholders for Electric Lamps*

IEC 60061-1 - 1969, *Lamp caps and holders together with gauges for the control of interchangeability and safety, Part 1: Caps*

IEC 60061-2 - 1969, *Lamp caps and holders together with gauges for for the control of interchangeability and safety, Part 2: Lampholders*

IEC 60061-3 - 1969, *Lamp caps and holders together with gauges for for the control of interchangeability and safety, Part 3: Gauges*

3 General information

Two types of gauge standard sheets are identified in this standard. For some gauges either no international standard exists or the international standard is not acceptable at this time. For such gauges an ANSI standard sheet is included. These standard sheets are identified in Table 1-- ANSI and IEC Lamp Base (Cap) Gauge Standard Sheets and Table 2-- ANSI and IEC Lampholder Standard Sheets, under the column heading "ANSI C81.63". These Standard Sheets are found in Part II.

Certain standard sheets from IEC standard 60061-1969 and its amendments, *Lamp caps and holders together with gauges for the control of the interchangeability and safety, Part 3: Gauges*, have been adopted as Nationally Acknowledged International Standards. These constitute part of the American National Standard for Gauges for lamp bases (caps) and lampholders for electric lamps. The standard sheets for these gauges are not included, but are identified in Tables I and 2 under the column heading "IEC 60061-3". Any United States deviations from these standard sheets are found in Part III.

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The drawings on the internationally standardized (IEC) sheets are in first angle projection rather than the third angle commonly used in the North American (ANSI) approved standard sheets. Annex A shows the difference between the two systems. In addition, the common American term "Base" is internationally known as "Cap". Internationally the decimal point (.) is not used in dimensions, rather a comma (,) separates a decimal number e.g. 4,5 rather than 4.5. However in the designation of a fit the decimal point is used e.g. GY6.35.

This Standard is used in conjunction with ANSI_IEC C81.61 "Bases for Electric Lamps" and ANSI_IEC C81.62, *Lampholders for Electric Lamps*. This Standard is also used in conjunction with IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety, Part1: Lamp caps, and* IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety, Part 2: Lampholders*.

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Table 1 - ANSI and IEC Lamp Base (Cap) Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-3	ANSI C81.63
Bayonet base gauges			
BA9	"Go" Gauge for BA9 Miniature Bayonet Based Lamps		3-10-1
BA9	"Not-go" Gauge for BA9 Miniature Bayonet Based lamps		3-11-1
BA15	"Go" Gauge for BA15 Candelabra Bayonet Based Lamps		3-20-2
BA15	"Not-Go" Gauge for BA15 Candelabra Bayonet Based Lamps		3-21-1
BY22d	Gauges for testing the insertion of caps in lampholders	7006-4A-2	
BY22d	"Not-go" gauges for caps on finished lamps	7006-10-8	
BY22d	"Go" gauge for cap on finished lamp	7006-17A-1	
Edison screw base gauges			
E5	"Go" gauge for caps on finished lamps	7006-25D-1	
E5	"Not go" gauge for caps on finished lamps	7006-25E-1	
E10	"Go" gauge for caps	7006-27A-1	
E10	"Not go" gauge for caps	7006-28E-1	
E11	"Go" gauge for caps on finished lamps	7006-6-1	
E12	"Go" gauge for caps on finished lamps	7006-27H-1	
E12	Additional "Go" gauge for caps on finished lamps	7006-27J-1	
E12	"Not go" gauge for caps on finished lamps	7006-28C-1	
E12	Gauge for finished lamps fitted with caps for testing contact making	7006-32-1	
E17	Gauge for testing contact-making of lamps fitted with caps	7006-26D-1	
E17	"Go" gauge for caps on finished lamps	7006-27K-1	
E17	"Not go" gauge for caps on finished lamps	7006-28F-1	
E26, E26d,E26/50x39	"Go" gauge for caps	7006-27D-2	
E26,E26d,E26/50x39, E26/53x39	"Not go" gauge for caps	7006-29L-3	
E26, E26d,E26/50x39	Gauge for testing contact-making of lamps fitted with caps	7006-29-2	
E26d	Gauge for caps on finished lamps for testing protection against accidental contact.	7006-29A-1	
E26d	Gauge with reference diameter of 23mm (.906") for caps	7006-29B-1	
E26d	Gauge with reference diameter of 13.2mm (.520") for caps	7006-29C-1	
E26d	Gauge with reference diameter of 10.4mm (.410") for caps	7006-29D-1	
E26/53x39	Threaded "Go" Gauges for Unmounted E26/53x39 Skirted Bases and E26/53x39 Medium Screw Based Lamps		3-160-2
E26/53x39	Gauge for Testing Contact Making of E26/50x39 Skirted Medium Screw Based Lamps		3-166-2
E39, E39d, EX39	Gauge for finished lamps fitted with E39 caps for testing contact making	7006-24A-1	
E39, E39d, EX39	"Go" gauge for caps on finished lamps	7006-24B-1	
E39, EP39, E39d, EX39	"Not go" gauge for caps on finished lamps	7006-24C-1	
EP39	Threaded "Go" Gauge for Position Oriented Mogul Screw Based Lamps		3-202-2
EP39	Gauge for Testing Contact Making of Position Oriented Mogul Screw Based Lamps		3-203-2
Single pin base gauges			
Fa8	"Go" gauge for single pin cap	7006-40-1	
Fa8	"Not go" gauge for single pin cap	7006-40A-1	
Fc2	Gauge for checking alignment of caps on finished lamps	7006-114-1	

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Table 1 - ANSI and IEC Lamp Base (Cap) Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-1	ANSI C81.61
Multiple pin base gauges			
G1.27, GX1.27, G2.54, GX2.54, G3.17	"Go" gauges for bi-pin lamp caps on finished lamps	7006-4-1	
G4	"Go" and "Not go" gauges for bi-pin lamp bases	7006-72-1	
GU4	"Go" and "Not-go" gauge for bi-pin bases	7006-108-1	
GZ4	"Go" gauge for bi-pin lamp bases	7006-67-1	
G5	"Go" and "Not-Go" Gauge for Miniature Bi-pin Bases on Finished Lamps		3-310-2
G5	Pin Torsion Test Device for G5 Miniature Bi-pin Base		3-311-1
G5.3	Gauge for bi-pin cap G5.3 on finished lamps	7006-73-1	
GU5.3	"Go" and "Not-go" gauge for bi-pin bases	7006-109-1	
GX5.3	"Go" and "Not go" gauge for bi-pin lamp base	7006-73B-1	
GY5.3	"Go" and "Not go" gauge for bi-pin lamp base	7006-73C-1	
G/GX/GY/GZ6.35	"Go" and "Not go" gauges for bases	7006-61-1	
G/GX/GY6.35	"Go" gauges for bases	7006-61A-1	
GZ6.35	"Go" gauge for bi-pin lamp bases	7006-59B-1	
2G7, 2GX7	"Go" and "Not-go" gauge for caps on finished lamps	7006-102-1	
GU7	"Go" and "Not go" gauge for bases	7006-113-2	
G7.9, GX7.9	"Go" Gauges for G7.9 and GX7.9 Based Lamps		3-356-1
GR8	"Go" gauge for unmounted caps	7006-68-2	
GR8	Gauge for caps to ensure entry of maximum lampholders and to check pin spacing and length	7006-68A-2	
GR8, GR10q	"Go" gauges for checking the pins of caps on finished lamps	7006-68E-1	
GR8, GR10q	"Go" and "Not go" gauge for checking the pins of caps (Not for use on finished lamps)	7006-68F-1	
G8.5	"Go" and "Not go" gauge for bases	7006-122-1	
G9	"Go" gauge for base	7006-129-1	
G9	"Not go" gauge for base	7006-129A-1	
G9.5	"Go" Gauge for G9.5 based lamps	7006-70D-1	
GY9.5, GZ9.5	Gauges for bi-pin caps GY9.5 and GZ9.5 on finished lamps	7006-70C-1	
2G10	"Go" gauge for caps	7006-118-1	
G10q	"Go" gauge for four-pin circular fluorescent lamp base on finished lamps	7006-79-1	
GR10q	"Go" gauge for unmounted caps	7006-77-2	
GR10q	Gauge for caps to ensure entry of maximum lampholders and to check pin spacing and length	7006-77A-2	
2G11	"Go" gauge for caps on finished lamps	7006-82-1	
G12	"Go" and "Not go" gauge for caps on finished lamps	7006-80-1	
G13	"Go" and "Not go" Gauge for Medium Bi-pin Bases on Finished Lamps		3-406-2
G13, G5	"Go" and "Not go" Gauge for Unmounted G5 and G13 Bi-pin Bases		3-407-2
G13	Pin Torsion Device for Medium Bi-pin Bases		3-410-1
2G13	"Go" Gauges for 2G13 Bases		3-420-3
2GX13	"Go" and "Not go" gauge "A" for caps	7006-125A-1	
2GX13	"Go" and "Not go" gauge "A" for caps	7006-125B-1	
G16d	"Go" Gauge for Mogul and Extended Mogul End Prong Bases		3-430-3
G17t, G17q	"Go" Gauge for Based Lamps (Pin Arrangement No. 1)		3-439-1
GX17q	"Go" Gauge for Based Lamps (Pin Arrangement No. 2)		3-440-1
G20	"Go" Gauge for Mogul Bi-pin Bases on Finished Lamps		3-452-1
G22	"Go" and "Not go" gauge for G22 medium bi-post based lamps	7006-75-1	
G23	"Go" and "Not go" gauge for bi-pin caps on finished lamps	7006-69-2	
GX23	"Go" and "Not go" gauge for bi-pin cap on finished lamps	7006-86-1	
G24, GX24, GY24	"Go" and "Not go" gauges for caps	7006-78-3	
G32d, G32q	"Go" and "Not go" gauges for caps on finished lamps	7006-87-2	
G38	"Go" gauge for bi-pin caps and bases G38 on finished lamps	7006-76-1	
G38	"Go" and "Not go" gauge for pins of bi-pin caps and bases G38 on finished lamps	7006-76A-1	

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Table 1 - ANSI and IEC Lamp Base (Cap) Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-1	ANSI C81.61
Prefocus base gauges			
PG12, PGX12	"Go" and "Not go" gauges for caps on finished lamps	7006-81-3	
PG13, PGJ13, PGJ19	"Go" and "Not go" gauge "A" for caps	7006-107-2	
PG13, PGJ13	"Go" gauge "B" for caps	7006-107B-1	
PG13, PGJ13	"Go" and "Not go" gauge for caps	7006-107C-1	
PG20, PGU20	Gauge for testing the springs of caps	7006-127-1	
PG20, PGU20	Gauge for testing the contacts of caps	7006-127B-1	
PK22s	Combined "Go" gauge for caps on finished lamps	7006-66-1	
P28s	"Go" gauge for cap on finished lamps	7006-42-1	
P30	"Go" and "Not go" Gauge for Diameter of Collar on P30 Prefocus Bases on Finished Lamps		3-709-1
P40	"Go" Gauge for P40 Mogul Prefocus Based Lamps and for Unmounted Bases		3-715-1
Recessed base gauges			
R17d	"Go" and "Not go" Gauge for R17d Recessed Double Contact Bases on Finished Lamps		3-777-1
Flanged, grooved, and side base gauges			
SX4	"Go" Ring Gauge for SX4 Submidget Flanged Based Lamps		3-850-1
SX4	"Not go" Ring Gauge for SX4 Submidget Flanged Based Lamps		3-851-1
Wedge base gauges			
W2.1x4.9d	Minimum and Maximum Retention Gauges		3-919-1
W2.1x9.2d	Minimum and Maximum Retention Gauges		3-920-1
WX2.5x16	"Go" gauge for bases	7006-104B-1	
WY2.5x16	"Go" gauge for bases	7006-104D-1	
WZ2.5x16	"Go" gauge for bases	7006-104F-1	

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Table 2 - ANSI and IEC Lampholder Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-3	ANSI C81.63
Bayonet lampholder gauges			
BA9	"Go" and "Not-Go" Plug Gauges for Miniature Bayonet Lampholders		3-14-1
BA9	BA9 Lampholder Minimum and Maximum Retention Gauges		3-15-1
BA15, BAY15, BAZ15	Lampholder Bulb Support Gauges		3-23-1
BA15	"Go" and "Not-Go" Plug Gauges for BA15 Candelabra Bayonet Lampholders		3-24-2
BY22d	Gauges for testing the insertion of caps in lampholders	7006-4A-2	
BY22d	Supplementary "Go" gauges for lampholders.	7006-12A-2	
BY22d	Gauges for the slots in lampholders	7006-13-5	
BY22d	Gauges for checking contact position and contact force in bayonet lampholders	7006-15A-2	
BY22d	“Go” and “Not Go” gauge for lampholders	7006-17B-1	
Edison screw lampholder gauges			
E5	Go	7006-25F-1	
E5	Not Go	7006-25G-1	
E10	Go	7006-25-1	
E10	Not Go	7006-26-1	
E11	Gauge A Contact making	7006-6A-1	
E11	Gauge G Contact making	7006-6B-1	
E12	Go	7006-25C-1	
E12	Not Go	7006-26B-1	
E12	Contact-making	7006-32A-1	
E17	Go	7006-25H-1	
E17	Not Go	7006-26C-1	
E17	Contact-making	7006-26E-1	
E26, EX26	Go	7006-25B-1	
E26	Contact-making	7006-25J-1	
E26, E26d, EX26	Not Go	7006-26A-1	
E26d	Relative positions of the contacts	7006-29E-1	
E26d	Relative positions of the contacts	7006-29F-1	
E26d	Contact-making	7006-29G-1	
E26d	Contact-making in metal-shell paper-lined	7006-29H-1	
E26d	Protection against accidental contact	7006-29J-1	
E26d	Go	7006-29K-1	
E26d	Unacceptable contact-making	7006-29M-1	
EX26	Threaded Gauge for Testing Contact Making		2-911-1
E39	Not Go	7006-26-1	
E39, E39d, EX39	Protection against bulb-neck damage and testing contact--making	7006-24D-1	
E39, EP39, EX39	Go	7006-24E-1	
E39	Maximum insertion torque	7006-24F-1	
E39	Minimum torque	7006-24G-1	
EP39, EX39	“Not Go” Plug Gauge		3-191-3
EP39	Threaded Gauge for Testing Minimum Insertion Clearance		3-204-2
EP39	Threaded Gauge for Testing Contact Making		3-205-2
EX39	Threaded “Go” Gauge		3-210-1
EX39	Threaded Gauge for Testing Contact Making		3-211-1
EX39	Minimum Torsion Gauge		3-212-1
EX39	Maximum Insertion Torque Gauge		3-213-1

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Table 2 - ANSI and IEC Lampholder Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-3	ANSI C81.63
Single pin lampholder gauges			
Fc2	Go	7006-114A-1	
Fc2	Contact-making	7006-114B-1	
Fc8	Maximum insertion and withdrawal forces	7006-41A-1	
Fa8	Minimum withdrawal force and contact-making	7006-58G-1	
Multiple pin lampholder gauges			
G4	Go	7006-72A-1	
G4	Minimum contact force	7006-72B-1	
GU4	Maximum insertion and withdrawal forces	7006-108A-2	
GU4	Minimum retention orce	7006-108B-2	
GU4	Go	7006-108C-2	
GZ4	Go for connector	7006-67A-2	
GZ4 & GU4	Contact making	7006-108D-1	
G5	“Go” Gauges for Miniature –- Bipin Lampholders		3-313-1
G5	Torsion test Devices for Miniature Bi-pin Lampholders		3-314-2
G5	Double-Ended gauge, Maximum-Length Lamp and Minimum Lampholder Spacing for Miniature Bi-Pin Lampholders		3-317-2
G5	Double-Ended “Go” Gauges for a Combined Pair of Medium Bi-Pin Lampholders		3-318-2
G5.3	Go	7006-73A-1	
GU5.3	Maximum insertion and withdrawal force	7006-109A-1	
GU5.3	Minimum retention force	7006-109B-1	
GU5.3	Go	7006-109C-1	
GX5.3	Maximum withdrawal force of contacts	7006-73F-1	
GX5.3, GU5.3	Contact-making	7006-73G-1	
GY5.3	Go	7006-73E-1	
GY5.3	Maxium withdrawal force of contacts	7006-73H-1	
GY5.3	Minimum retention force of contacts	7006-73J-1	
G/GX/GY6.35	Go	7006-61B-1	
G6.35, GX6.35	Minimum contact force	7006-61C-1	
GY6.35	Minimum contact retention force	7006-59D-1	
GZ6.35, GZ4	Minimum contact force in conectors	7006-59A-1	
GZ6.35	Go for connectors	7006-59C-1	
2G7	Go “A”	7006-102A-1	
GU7	Go and maximum insertion and withdrawal	7006-113A-2	
2G7, 2GX7	Go “B”	7006-102B-1	
2G7	Go “C”	7006-102C-1	
2GX7	Go “A”	7006-103-1	
2GX7	Go “C”	7006-103A-1	
2G7, 2GX7, 2G10, 2G11, G23, GX23, G24, GX24, GY24, G32, GX32, GY32	Go “D”	7006-69D-5	
2G7, 2GX7, 2G10, 2G11, G23, GX23, G24, GX24, GY24, G32, GX32, GY32	Go “E”	7006-69E-5	
G7.9, GX7.9	“Go” Gauge for Lampholders		3-359-2
G7.9, GX7.9	Minimum Contact Retention Force Gauge for Lampholders		3-362-1
GR8	Go “A” and “B”	7006-68C-1	
GR8	Go “C”	7006-68D-1	
G8.5	Go “A”	7006-122A-1	
G8.5	Go “B”	7006-122B-1	
G8.5	Go “C”	7006-122C-1	
G8.5	Not Go	7006-122D-1	
G9	Two loop contacts for single ended TH lamps	7006-129B-1	

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Table 2 - ANSI and IEC Lampholder Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-1	ANSI C81.61
Multiple pin lampholder gauges, continued			
G9.5	Go	7006-70E-1	
G9.5	Minimum contact retention force	7006-70F-1	
GX9.5	Go	7006-70-1	
GX9.5	Minimum contact force	7006-70A-1	
GX9.5	Retention	7006-70B-1	
GY9.5, GZ9.5, G10q	Go for contacts	7006-79A-1	
G10q	Contact-making	7006-79B-1	
G10q	Go “A” and “B”	7006-77B-1	
G10q	Go “C”	7006-77C-1	
2G10	Go “A”	7006-118A-1	
2G10	Go “B”	7006-118B-1	
2G10	Go “C”	7006-118C-1	
2G11	Go “A”	7006-82A-1	
2G11	Go “B:	7006-82B-1	
2G11	Go “C”	7006-82C-1	
G12	Go “A”	7006-80A-1	
G12	Go “B”	7006-80B-1	
G12	Go “C”	7006-80C-1	
G12, PG12, PGX12	Go “D”	7006-80D-3	
G12, PG12, PGX12	Go “E”	7006-80E-3	
G13	Torsion Test Device for G13 Medium Bipin Lampholders		3-414-1
G13	Double-Ended “Go” gauges for a Combined Pair of Medium Bi-Pin Lampholders		3-417-3
G13	Double-Ended Gauges for Testing Contact Making for a Combined Pair of Medium Bi-Pin Lampholders Mounted at Maximum Spacing		3-418-3
2G13	Insertion and contact-making	7006-33A-1	
2G13	Contact-making	7006-33B-1	
2G13	“G” Gauge for Lampholders		3-423-2
2G13	Contact Making Gauge		3-424-1
2GX13	Go	7006-125-1	
2GX13	Contact-making	7006-125C-1	
2GX13	Retention force	7005-125D-1	
G16d	“G” Gauge for Connector		3-433-3
G17, GX17q	Two-Pin Contact Making Gauge for Four-Pin Prefocus Lampholders		3-445-1
G17, GX17q	Rotation Gauge for Four-pin Prefocus Lampholders		3-446-1
G17q	“Go” Gauge for Lampholders (Pin Arrangement No. 1)		3-443-3
GX17q	“Go” Gauge for Lampholders (Pin Arrangement No. 2)		3-444-1
G20	“Go” Gauges for G20 Mogul Bipin Lampholders		3-455-1
G20	Torsion Test Device for Mogul Bi-Pin Lampholders		3-456-1
G20	Double-Ended gauge, Maximum Length Lamp and Minimum Lampholder Spacing for Mogul Bi-Pin Lampholders		3-459-1
G20	Double-Ended Gauge, Minimum Length Lamp and Maximum Lampholder Spacing for Mogul Bi-Pin Lampholders		3-460-1
G22	Go	7006-75-1	
G23	Go “A”	7006-69A-1	
G23, GX23	Go “B”	7006-69B-2	
G23	Go “C”	7006-69C-1	
GX23	Go “A”	7006-86A-1	
GX23	Go “C”	7006-86B-1	
G24, GX24, GY24	Go “A”	7006-78A-4	
G24, GX24, GY24	Go “B”	7006-78B-4	
G24, GX24, GY24	Go “C”	7006-78C-4	
G24, GX24, GY24	Not Go “F”	7006-78F-5	
G24, GX24, GY24	Go “G”	7006-78G-4	
G32, GY32	Go “A1”	7006-87A-2	

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Table 2 – ANSI and IEC Lampholder Gauge Standard Sheets

System	Description	Standard Sheets	
		IEC 60061-1	ANSI C81.61
Multiple pin lampholder gauges, continued			
G32, GX32, GY32	Go "B"	7006-87B-2	
G32, GX32, GY32d	Go "C"	7006-87C-2	
G32, GX32, GY32d	Not Go "F"	7006-87D-2	
G32, GX32, GY32d	Go "G"	7006-87E-2	
GX32	Go "A2"	7006-87F-2	
G38	Go (1st gauge)	7006-76B-1	
G38	Go (2nd gauge)	7006-76C-1	
G38	Minimum contact force	7006-76D-1	
Prefocus lampholder gauges			
PG12, PGX12	Go "A"	7006-81A-3	
PG12, PGX12	Go "B"	7006-81B-3	
PG12, PGX12	Go "C"	7006-81C-3	
PG12, PGX12	Go "F"	7006-81F-3	
PG12, PGX12	Go "G"	7006-81G-3	
PG13, PGJ13	Go	7006-107A-2	
P28s	"Go" Gauges for lampholders	7006-42A-1	
P40	"Go" Gauge for Mogul Prefocus Lampholders		3-718-1
Recessed lampholder gauges			
R7s	Go for combined pair of holders	7006-62-1	
RX7s	Go for combined pair of holders	7006-62A-1	
R17d	"Go" gauge for Recessed Double-Contact Lampholders		3-780-1
R17d	Contact-Making gauge for Recessed Double-Contact Lampholders		3-781-1
R17d	Double-Ended "Go" Gauge, Maximum Length Lamp and Minimum Lampholder Spacing for Recessed Double Contact Lampholders		3-784-1
R17d	Double-Ended "Go" Gauge, Minimum Length Lamp and Maximum Lampholder Spacing, for Recessed Double-Contact Lampholders		3-785-1
Flanged, grooved, and side lampholder gauges			
S14d	Go "A"	7006-112D-1	
S14d	Go "B1"	7006-112E-1	
S14s	Go "A"	7006-112A-1	
S14s	Go "B:	7006-112B-1	
S14s	Go "C"	7006-112C-1	
Wedge lampholder gauges			
W2.5x16q	Go	7006-104A-1	
WX2.5x16q	Go	7006-104C-1	
WY2.5x16q	Go	7006-104E-1	
WZ2.5x16q	Go	7006-104G-1	
W4.3x8.5d	Go	7006-115-1	
W4.3x8.5d	Insertion and withdrawal forces	7006-115A-1	
W4.3x8.5d	Contact-making	7006-115B-1	
Fluorescent Lamp Starter Holders			
	"Go" Gauges for Fluorescent Lamp Starter Holders		3-900-1
	Contact-Making and Retention Force Gauge for Fluorescent Lamp Starter Holders		3-901-1

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Part II
ANSI Standard Sheets for Gauges for Bases (Caps) and Lampholders for Electric Lamps

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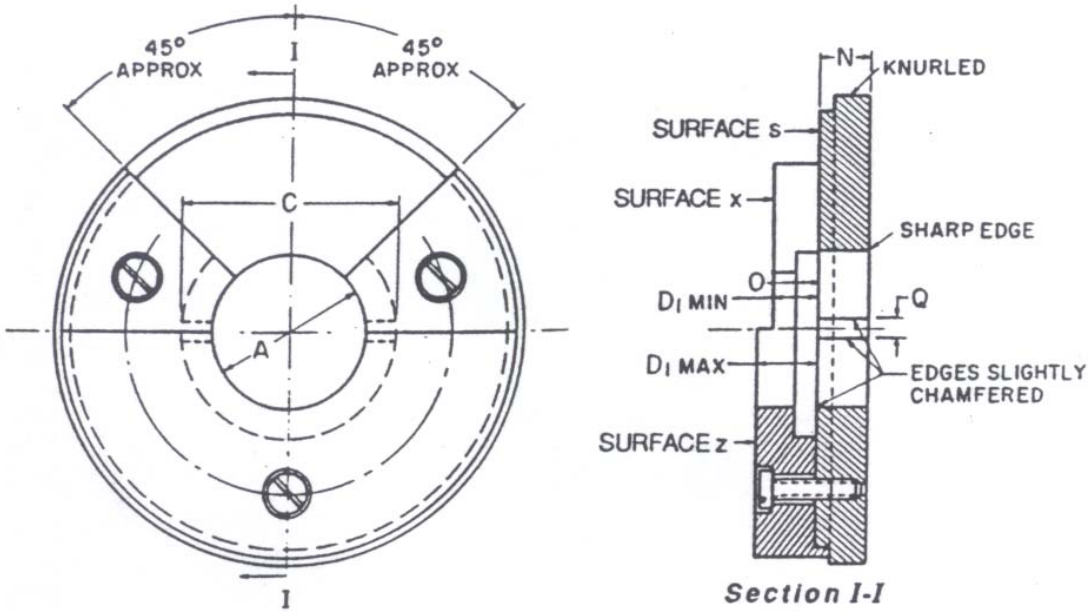
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"Go" Gauge for BA9 Miniature-Bayonet-Based Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.366	+0.0005	9.30
C	0.432	+0.0005	10.97
D_1 min	0.180	-0.0005	4.57
D_1 max	0.255	+0.0005	6.48
N	0.180	-0.0005	4.57
O	0.120	±0.001	3.05
Q	0.083	+0.0005	2.11

Purpose
To check dimension A max, C max, D_1 min, D_1 max, N min, and the combination of E max (pin diameter) and the pin alignment tolerance.

For details of BA9 bases, see ANSI_IEC C81.61, Standard Sheet 1 -10.

Testing
Insert the base into the gauge, passing the pins through slots Q. Turn the base through a small angle and hold it so that the pins are in close contact with surface s. Check the position of the contact.

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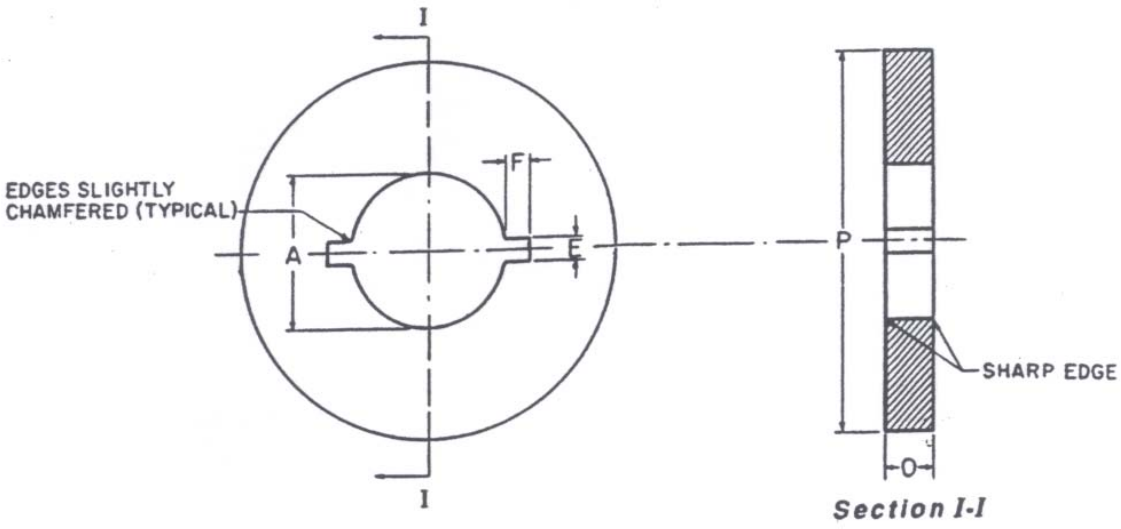
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"Not-Go" Gauge for BA9 Miniature-Bayonet-Based Lamps

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.357	-0.0005	9.07
E	0.125	±0.020	3.18
F	0.125	±0.020	3.18
O	0.250	approx	7.0
P	1.5	approx	38.0

Purpose
To check dimension A min.

For details of BA9 bases, see ANSI_IEC C81.61, Standard Sheet 1-10.

Testing
Attempt to insert the base into the gauge.

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"Go" and "Not-Go" Plug Gauges for BA9 Miniature-Bayonet Lampholders

Gauge	Standard Diameters (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
*Go”	0.367	-0.0005	9.31
'Not-Go"	0.373	+0.0005	9.48

For details of BA9 bases, see ANSI_IEC C81.61, Standard Sheet 1-10.

Testing
Insert the “Go" gauge into the lampholder. Attempt to insert the “Not-Go" gauge.

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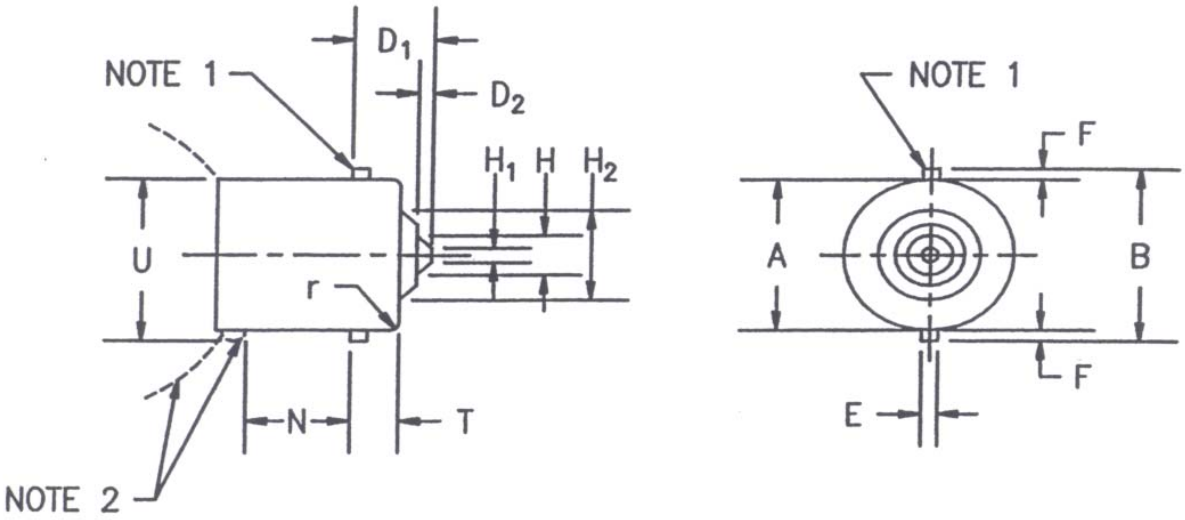
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BA9 Lampholder Minimum And Maximum Retention Gauges

The drawing is intended only to indicate the dimensions to be controlled.



Standard Dimensions (millimeters)				
Reference	Min Gauge	Tolerance	Max Gauge	Tolerance
A	9.07	-0.01	9.30	+0.01
B	10.26	-0.01	10.97	+0.01
D_1 (Note 1)	4.57	-0.01	6.48	+0.01
D_2	0.38	-0.01	1.27	-0.13
E	1.55	-0.01	1.70	+0.01
F	0.64	-0.01	-	-
H	3.73	-0.03	4.32	+0.03
H_1	1.52	+0.13	1.52	+0.13
H_2	6.40	NOM	6.40	NOM
N	4.57	-0.01	-	-
r	0.80	NOM	0.80	NOM
T	2.41	-0.03	3.33	+0.01
U	-	-	10.41	+0.01

NOTES
1 Pin alignment tolerance is +/- 0.03.
2 Allowance for bulb envelope and side solder may be required depending on the construction of the lampholder.

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Std Sheet 3-15-1
Page 2 of 2

Purpose
To check BA9 Lampholders for retention of bases of both minimum and maximum dimensions.

Testing
Insert both the minimum and maximum gauges in sequence into the lampholder until fully seated and rotated until locked. The maximum gauge's insertion force and rotational torque shall not exceed the values specified on ANSI_IEC C81.62 Standard Sheet 2-10.

Holder
See ANSI_IEC C81.62 Standard Sheet 2-10.

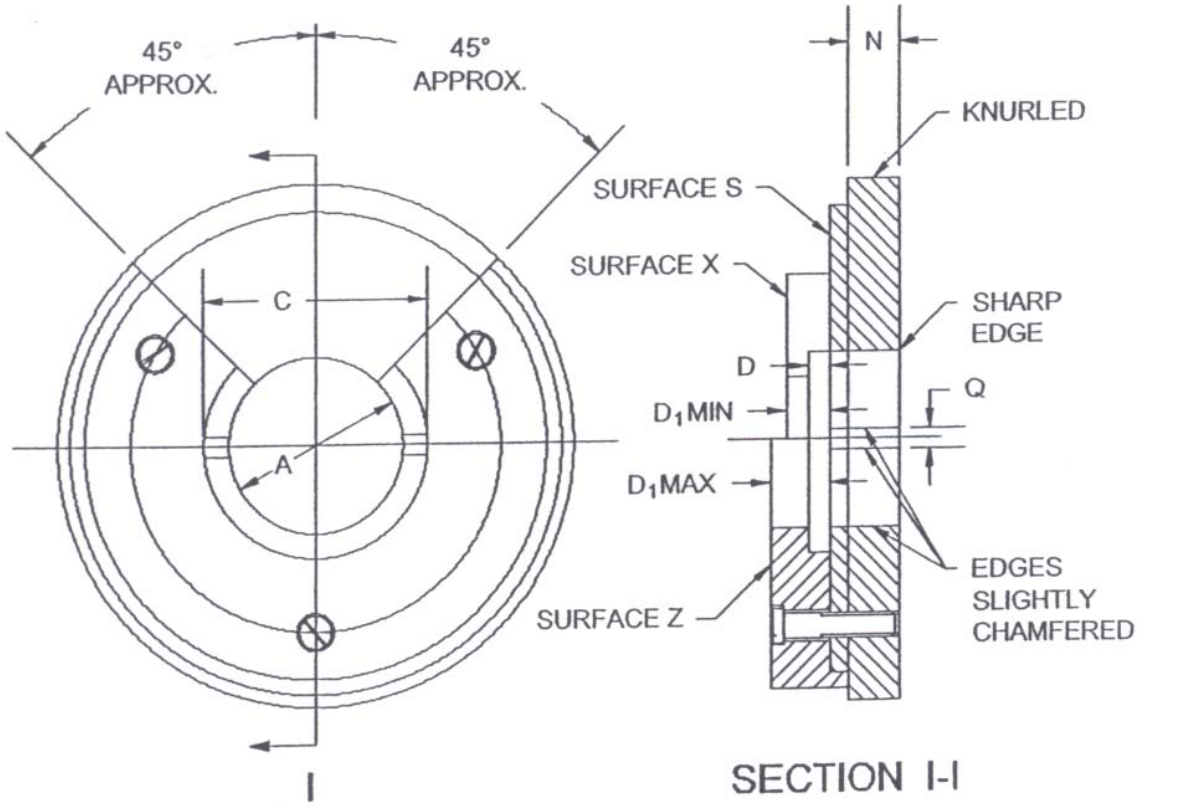
Base
See ANSI_IEC C81.6 Standard Sheet 1 -10.

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"Go" Gauge for BA15 Candelabra Bayonet-Based Lamps

The drawing is intended to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.6025	+0.0005	15.30
C	0.668	+0.0005	16.97
D_1 min	0.249	-0.0005	6.0
D_1 max	0.316	+0.0008	8.03
N	0.350	-0.0005	8.9
O	0.120	±0.001	3.05
Q	0.096	+0.0005	2.44

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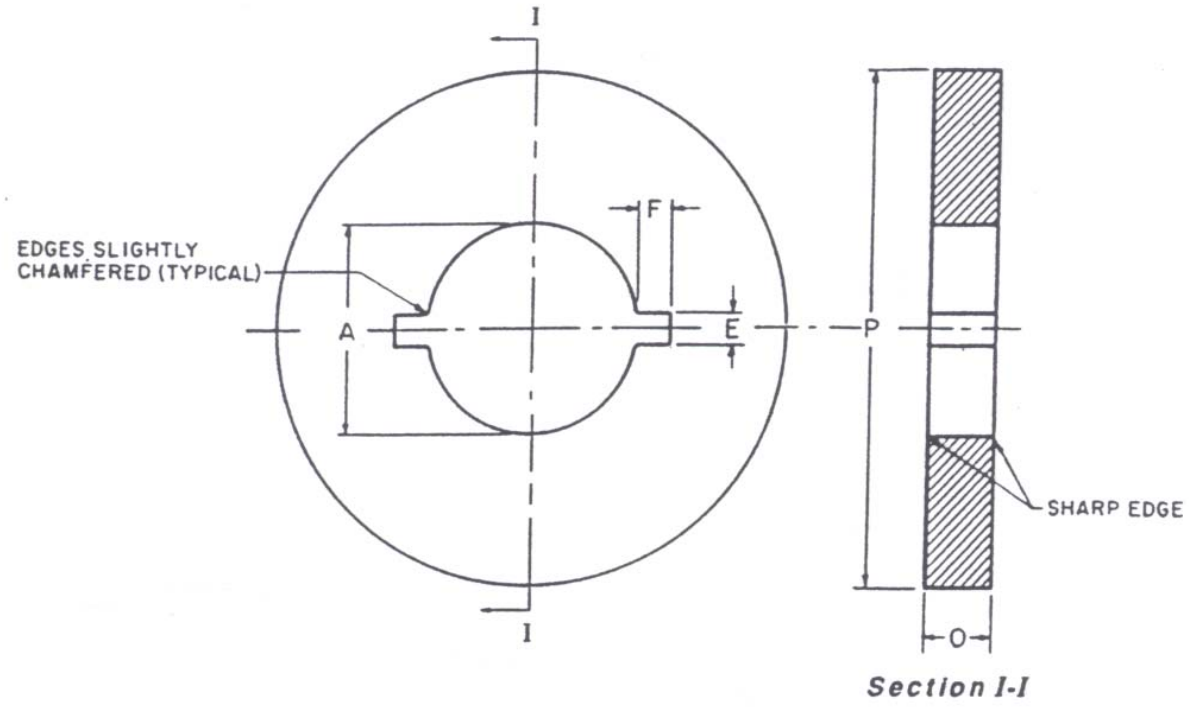
Purpose
To check dimension A max, C max, D_1 min, D_1 max, N min, and the combination of E max (pin diameter) and the pin alignment.

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"Not-Go" Gauge for BA15 Candelabra-Bayonet-Based Lamps

The drawing is intended only to illustrate essential dimensions of the gauge



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.5925	-0.0005	15.05
E	0.140	±0.020	3.5
F	0.140	±0.020	3.5
O	0.250	approx	7.0
P	1.5	approx	38.0

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Purpose
To check dimension A min.

For details of BA15 bases, see ANSI_IEC C81.61, Standard Sheet 1-20.

Testing
Attempt to insert the base into the gauge.

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BA15, BAY15 and BAZ15 Lampholder Bulb Support Gauges

The drawings are intended only to indicate the essential dimensions of the gauge.

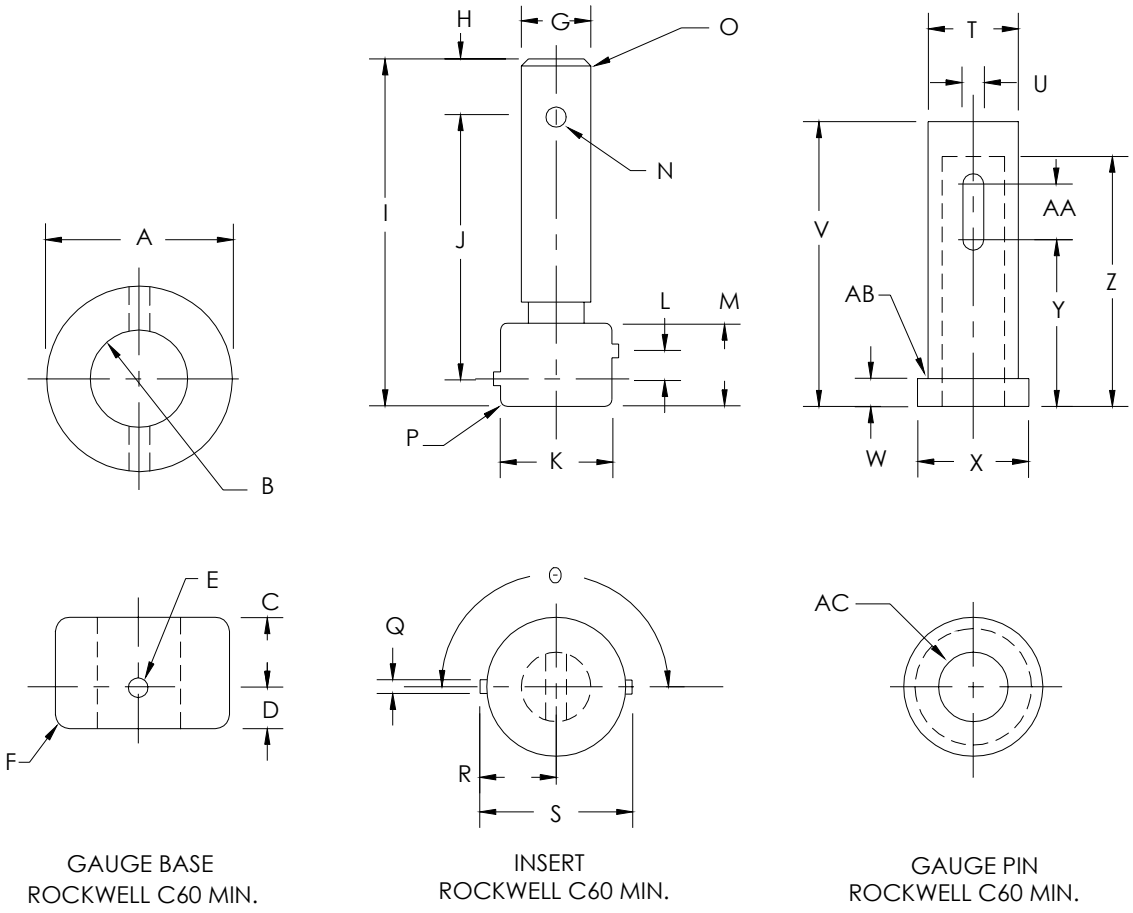


Figure 1 – Gauge Details

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Std Sheet 3-23-1
Page 2 of 4

Reference	Standard Dimensions (millimeters)		
	BA15	BAY15	BAZ15
A	25.4	25.4	25.4
B	12.79 ± 0.04	12.79 ± 0.04	12.79 ± 0.04
C	12.70 ± 0.01	12.70 ± 0.01	12.70 ± 0.01
D	6.35 ± 0.05	6.35 ± 0.05	6.35 ± 0.05
E (Note 2)	-	-	-
F	1.5 ± 0.13 R.	1.5 ± 0.13 R	1.5 ± 0.13 R
G	7.90 ± 0.02	7.90 ± 0.02	7.90 ± 0.02
H	4.8 ± 0.13	4.8 ± 0.13	4.8 ± 0.13
I	42.2 ± 0.13	42.2 ± 0.13	42.2 ± 0.13
J	33.57 ± 0.01	33.57 ± 0.01	33.57 ± 0.01
K	14.99 ± 0.05	14.99 ± 0.05	14.99 ± 0.05
L	0.00 ± 0.02	3.18 ± 0.02	3.18 ± 0.02
M	10.80 ± 0.05	10.80 ± 0.05	10.80 ± 0.05
N (Note 2)	-	-	-
O (Note 3)	-	-	-
P	1.5 ± 0.13 R.	1.5 ± 0.13 R	1.5 ± 0.13 R
Q	1.96 ± 0.02 dia.	1.96 ± 0.02 dia.	1.96 ± 0.02 dia.
R	8.16 ± 0.01	8.16 ± 0.01	8.16 ± 0.01
S	16.32 ± 0.02	16.32 ± 0.02	16.32 ± 0.02
T	12.66 ± 0.04	12.66 ± 0.04	12.66 ± 0.04
U	3.2 ± 0.13	3.2 ± 0.13	3.2 ± 0.13
V	38.10 ± 0.01	38.10 ± 0.01	38.10 ± 0.01
W	3.18 ± 0.05	3.18 ± 0.05	3.18 ± 0.05
X	15.47 ± 0.01	15.47 ± 0.01	15.47 ± 0.01
Y	20.6 ± 0.13	20.6 ± 0.13	20.6 ± 0.13
Z	33.3 ± 0.13	33.3 ± 0.13	33.3 ± 0.13
AA	9.7 ± 0.13	9.7 ± 0.13	9.7 ± 0.13
AB	0.8 ± 0.13 R	0.8 ± 0.13 R	0.8 ± 0.13 R
AC	8.00 ± 0.02	8.00 ± 0.02	8.00 ± 0.02
θ	180° Nom.	180° Nom.	150° Nom

NOTES
1 Gauge pin must be flush or above surface of gauge base for part to be acceptable.
2 Hole for press-fit to 2.40 diameter pin.
3 0.75 x 45° chamfer

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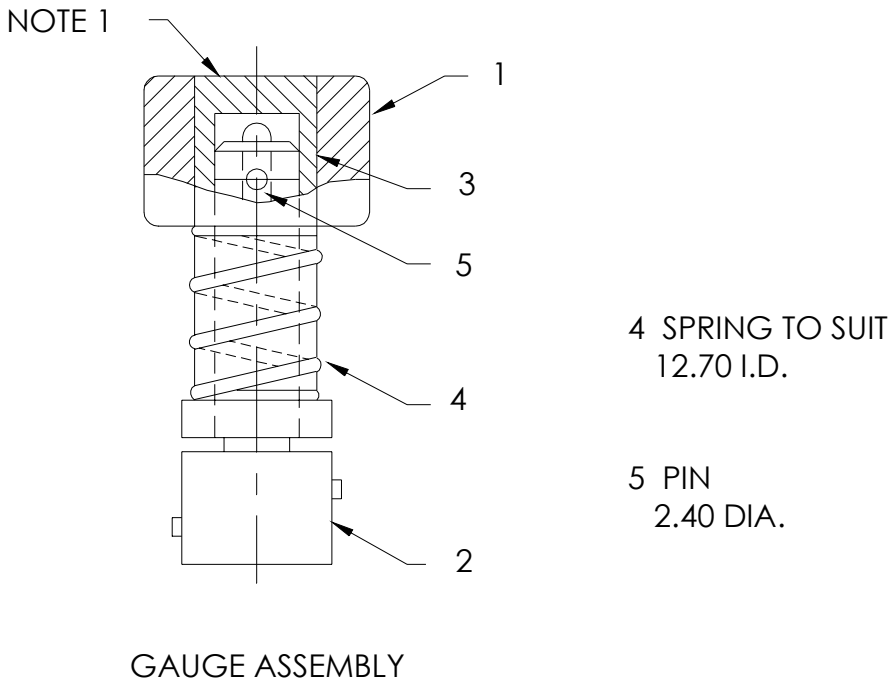


Figure 2 – Gauge Assembly

Purpose
To check BA15, BAY15, and BAZ15 lampholders for the minimum bulb support dimension.

The purpose of the minimum bulb support dimension is to ensure that the lamp retention system provides a minimum region of support diameter to stabilize the bulb against coaxial displacement which would result in de-focusing the bulb filament from its intended position. This is necessary for those applications demanding optical control or minimum photometric output.

Lampholders with undersized bulb support regions may allow the coaxial displacement of the bulb and the de-focusing of the filament(s) from the focal position resulting in:

1. Failure to meet proper filament focal position in lensed applications.
2. Reduced light output from the parabolic surface and failure to meet photometric specifications in reflector applications.

The use of the gauge relates to the lampholder requirements of a maximum inside diameter of 15.47 mm (0.609 in.) extending a minimum distance of 7.19 mm (0.283 in.) from the seat of the bulb retention slot (commonly referred to as the “J-slot”). Adherence to these requirements is necessary to insure the stability of a bulb in the lampholder, axially.

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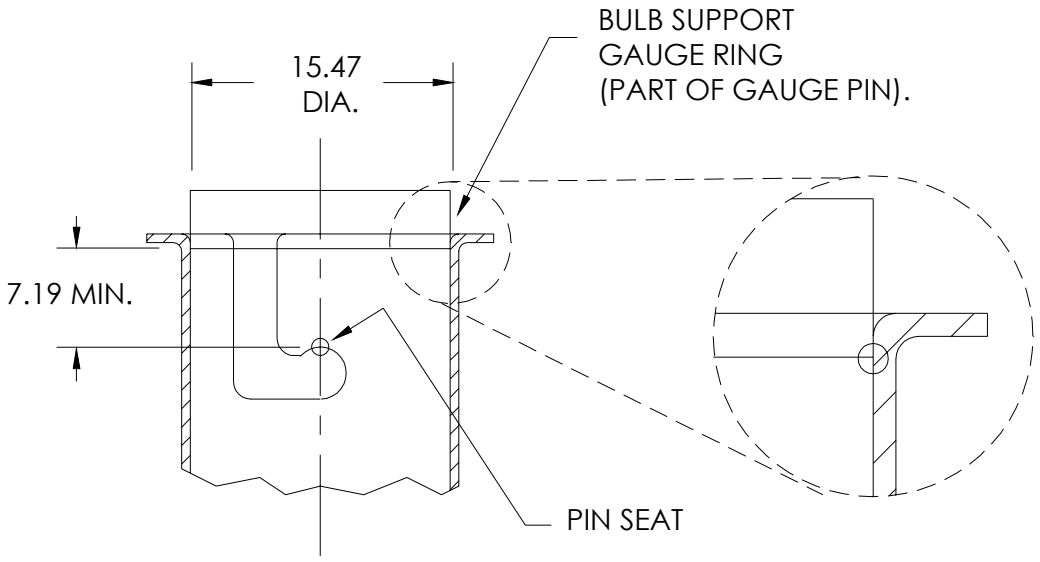


Figure 3 - Diagram of Gauge Function

Referring to figure 3, a cross-section of a lamp socket is shown which incorporates a flange whose transition from the socket diameter involves a radius that produces a “bell-mouthing” effect. This is a typical socket construction. In order for the lampholder to meet the minimum bulb support requirement the point at which the lampholder inside diameter begins to exceed the maximum allowable dimension must be greater than or equal to 7.19mm (0.283 in.) from the pin seat. The bulb support gauge ring will be seated against this point by the bulb support gauge spring.

Equivalent forms of gauging which similarly ensure, by means of attribute or measurement, that the lamp retention system provides a controlled inside diameter of 15.46 mm (0.609 in.) maximum for a minimum region of 7.19mm (0.283 in.) above the bulb pin seat, may optionally be used.

Testing
Insert the bulb support gauge into the lampholder until fully seated and rotate until locked.

Holder
See ANSI_IEC C81.62 Standard Sheet 2-20.

Base
See ANSI_IEC C81.61 Standard Sheets 1-20, 1-22, and 1-23.

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"Go" and "Not-Go" Plug Gauges for BA15 Candelabra-Bayonet Lampholders

In certain designs of lampholders, the inside diameter of the shell can be accurately checked only with the lampholder mounted in the fixture in which it is to be used. The "Go" and “Not-Go" plug gauges have diameters as listed in the following table. In checking tension-type lampholders, a reasonable amount of force may be used for inserting the “Go" gauge.

Gauge	Diameters (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
“Go”	0.6035	-0.0005	15.33
“Not-Go”	0.6095	+0.0005	15.48

For details of BA15 bases, see ANSI_IEC C81.61, Standard Sheet 1-20.

Testing
Insert the “Go” gauge into the lampholder. Attempt to insert the “Not-Go" gauge.

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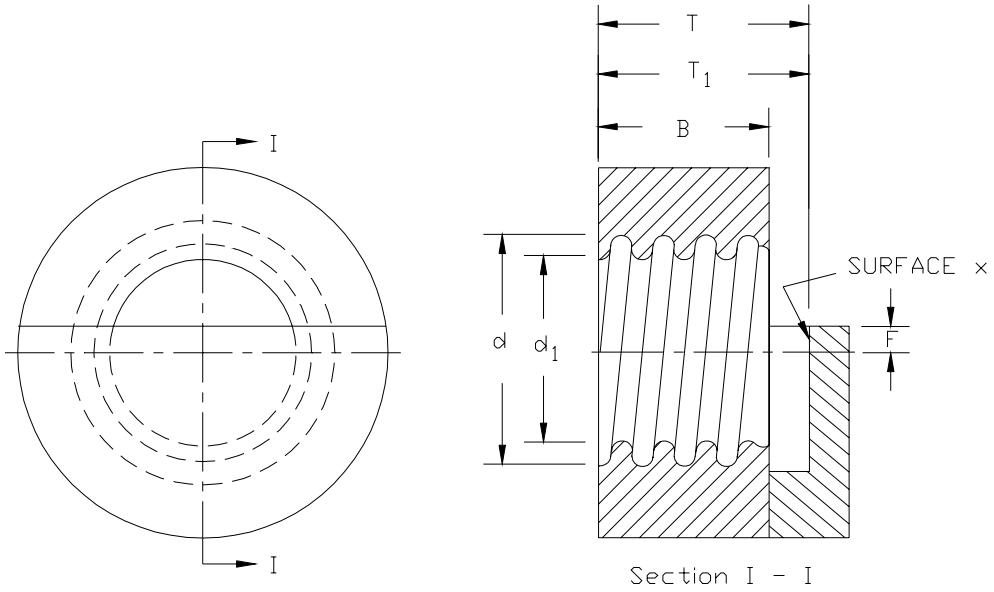
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Threaded "Go" Gauges for Unmounted E26/53x39 Skirted Medium-Screw Bases and E26/53x39 Skirted Medium-Screw-Based Lamps

Two separate gauges are required. One to accommodate unmounted bases (T) and one to accommodate screw-based lamps (T_1).

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
B	0.500	±0.005	12.70
F	0.230	±0.005	5.84
T (Note 1)	0.759	-0.001	19.28
T_1 (Note 2)	0.770	-0.001	19.56
d	1.040	+0.0012	26.41
d_1	0.973	+0.0012	24.72

NOTES
1 This dimension applies to unmounted bases.
2 This dimension applies to screw-based lamps.

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The form of the screw threads shall be in accordance with the dimensions shown in ANSI_IEC C81.61, Standard Sheet 7004-21A-2.

Purpose
To check thread diameter (dimensions d and d_1) and threaded length of unmounted (dimension T) and mounted skirted (dimension T_1) medium screw base.

For details of the E26/53x39 unmounted and mounted skirted medium screw base, see ANSI_IEC C81.61, Standard Sheet 1-162.

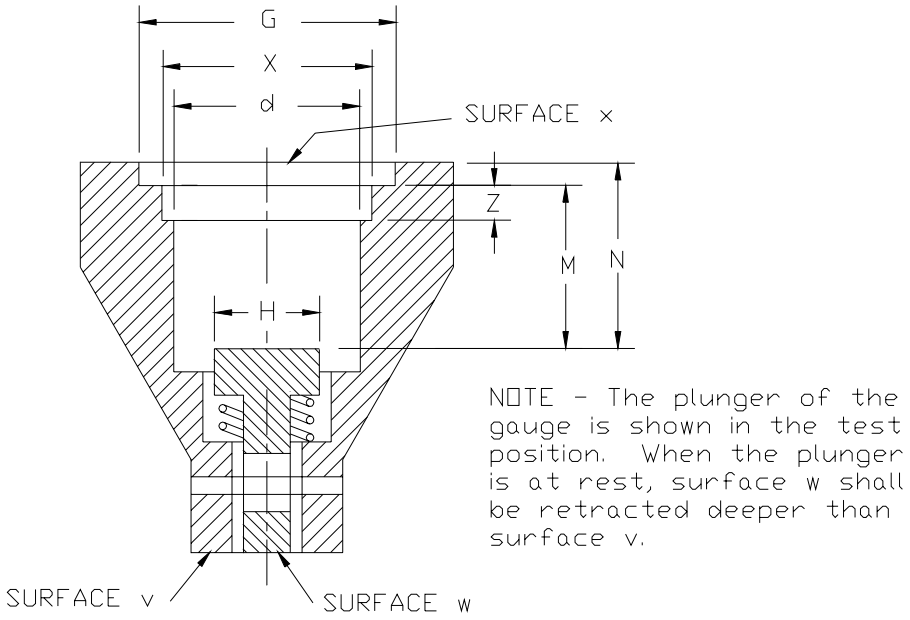
Testing
Screw the unmounted base or finished lamps into the gauge and check for contact with surface x. Remove the base or lamp, counting the number of turns for disengagement.

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Gauge for Testing Contact-Making of E26/53x39 Skirted Medium-Screw Based Lamps

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
G (dia)	1.590	+0.004	40.39
H (dia)	0.551	±0.004	14.00
M	1.057	+0.001	26.85
N	1.150	+0.001	29.21
X (dia)	1.110	+0.001	28.19
Z	0.272	±0.004	6.91
d (dia)	1.045	-0.0005	26.54

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Purpose
To check the base dimensions, particularly the base length, skirt shape, and projection of solder or other conductive material from the top of the metal shell, for their effect on contact-making in the lampholder.

For details of E26/53x39 skirted medium screw bases, see ANSI_IEC C81.61, Standard Sheet 1-162.

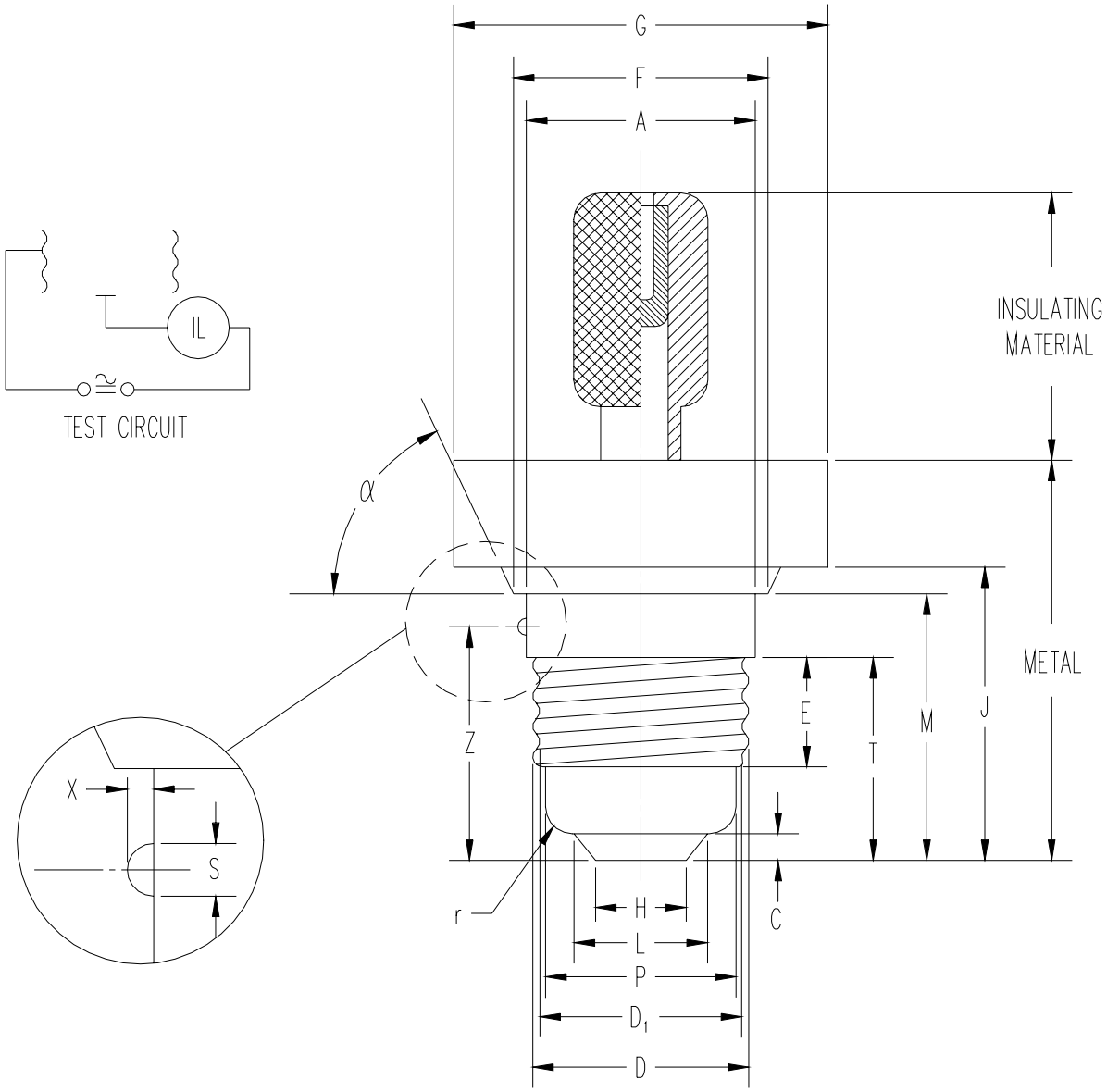
Testing
Push the lamp into the gauge until it stops and check the relationship of surfaces v and w. Also, check for the presence of any conductive material above surface x.

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Threaded Gauge for Testing Contact-Making of EX26 Single-Contact Medium Screw Lampholders

The drawing is intended only to indicate the dimensions to be controlled.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	1.031	+0.0008	26.20
C	0.125	+0.002	3.18
D	1.043	+0.0012	26.49
D_1	0.977	+0.0012	24.82
E	0.436	±0.002	11.07
F	1.085	+0.0008	27.56
G	1.280	+0.0008	32.50
H	0.447	±0.001	11.35
J	1.010	+0.002	25.65
L	0.665	±0.001	16.89
M	0.950	-0.002	24.13
P	0.945	-0.002	24.00
S	0.100	+0.005	2.54
T	0.760	-0.002	19.30
X	0.035 (Note 1)	+0.001	0.89 (Note 1)
Z	0.866	+0.004	22.00
r	0.125	±0.005	3.18
α (degrees)	45°	±30°	45°

NOTES
1 Future objective = 0.040 in (1.02 mm)

The form of the screw threads shall be in accordance with dimensions shown in ANSI_IEC C81.62, Standard Sheet 2-157.

Purpose
To check those holder dimensions that relate to contact-making with the lamps.

For details of the EX26 single-contact medium screw lampholder, see ANSI_IEC C81.62, Standard Sheet 2-157.

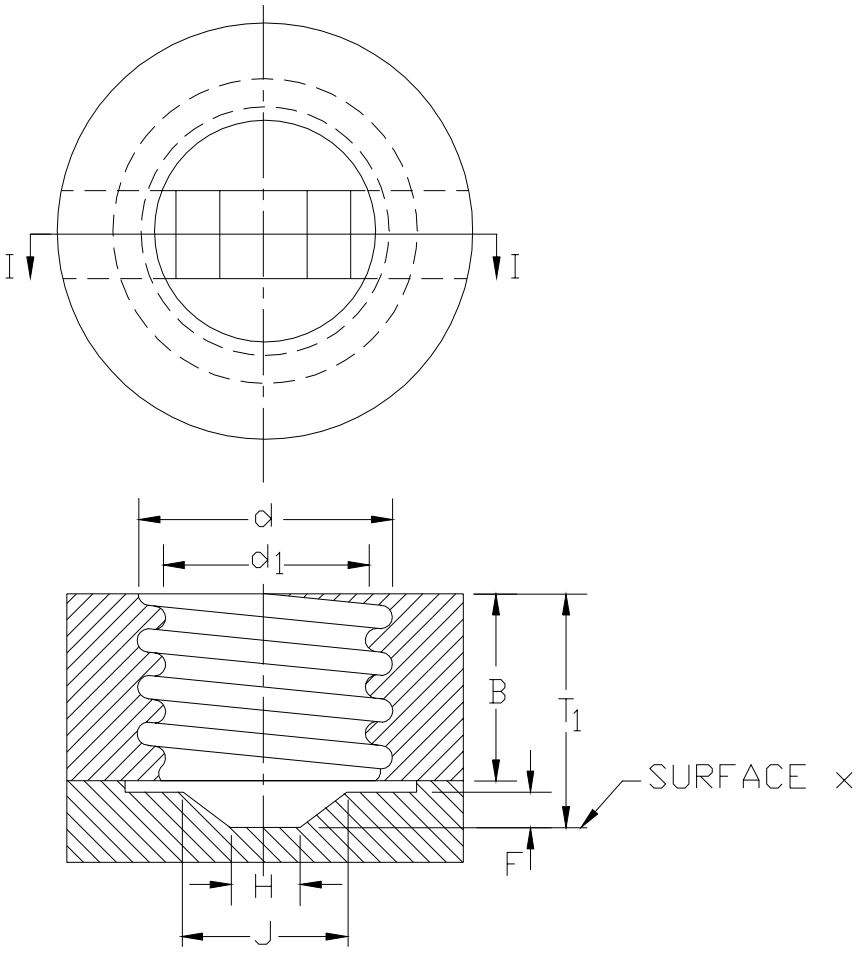
Testing
Screw the gauge fully into the holder and check the indicator lamp (IL). Also, check the clearance between the gauge and the upper edge of the holder.

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Threaded "Go" Gauge for Position-Oriented EP39 Mogul-Screw-Based Lamps

The drawing is intended only to illustrate essential dimensions of the gauge.



Section I-I

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
B	0.626	±0.005	15.90
F	0.187	-0.001	4.75
H	0.595	±0.001	15.11
J	1.250	+0.001	31.75
T_1	0.950	-0.001	24.13
d	1.558	+0.0012	39.56
d_1	1.458	+0.0012	37.02

The form of the screw threads shall be in accordance with the dimensions shown on ANSI_IEC C81.61, Standard Sheet 1-202.

The sharp part of the edge of the thread shall be broken with a radius of 0.2mm to 0.3mm (0.008 in to 0.012 in).

Purpose
To check thread diameter (dimensions d and d_1) and threaded length (dimension T_1).

For details of EP39 bases, see ANSI_IEC C81.61, Standard Sheet 1-202.

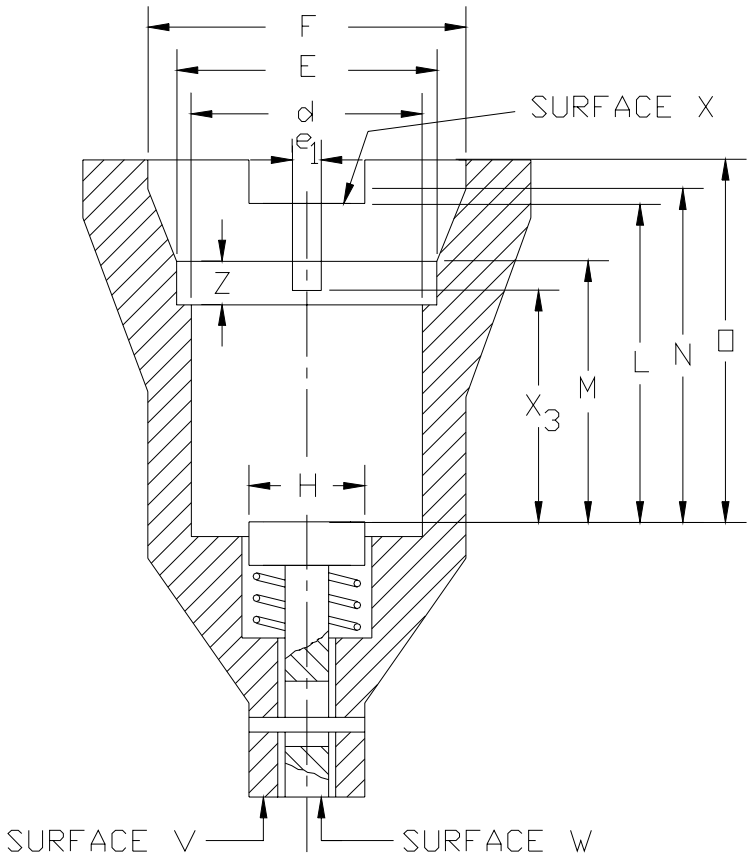
Testing
Screw the lamp into the gauge and check for contact at surface x.

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Gauge for Testing Contact-Making of Position-Oriented EP39 Mogul-Screw-Based Lamps

The drawing is intended only to illustrate essential dimensions of the gauge.



Note – The plunger of the gauge is shown in the test position. When the plunger is at rest, surface w shall be retracted deeper than surface v.

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
E (dia)	1.700	-0.001	43.18
F (dia)	2.500	-0.001	63.50
H (dia)	0.630	-0.004	16.00
L	1.800	+0.002	45.72
M	1.611	+0.001	40.92
N	2.211	+0.001	56.16
O	2.400	+0.003	60.96
X_3	0.9525	-0.0005	24.19
Z	0.410	±0.004	10.41
d (dia)	1.562	-0.001	39.66
e_1	0.100	+0.001	2.54

Purpose
To check the lamp dimensions, particularly the combination of base length and bulb shoulder shape, for their effect on contact-making in the lampholder.

For details of EP39 bases, see ANSI_IEC C81.61, Standard Sheet 1-202.

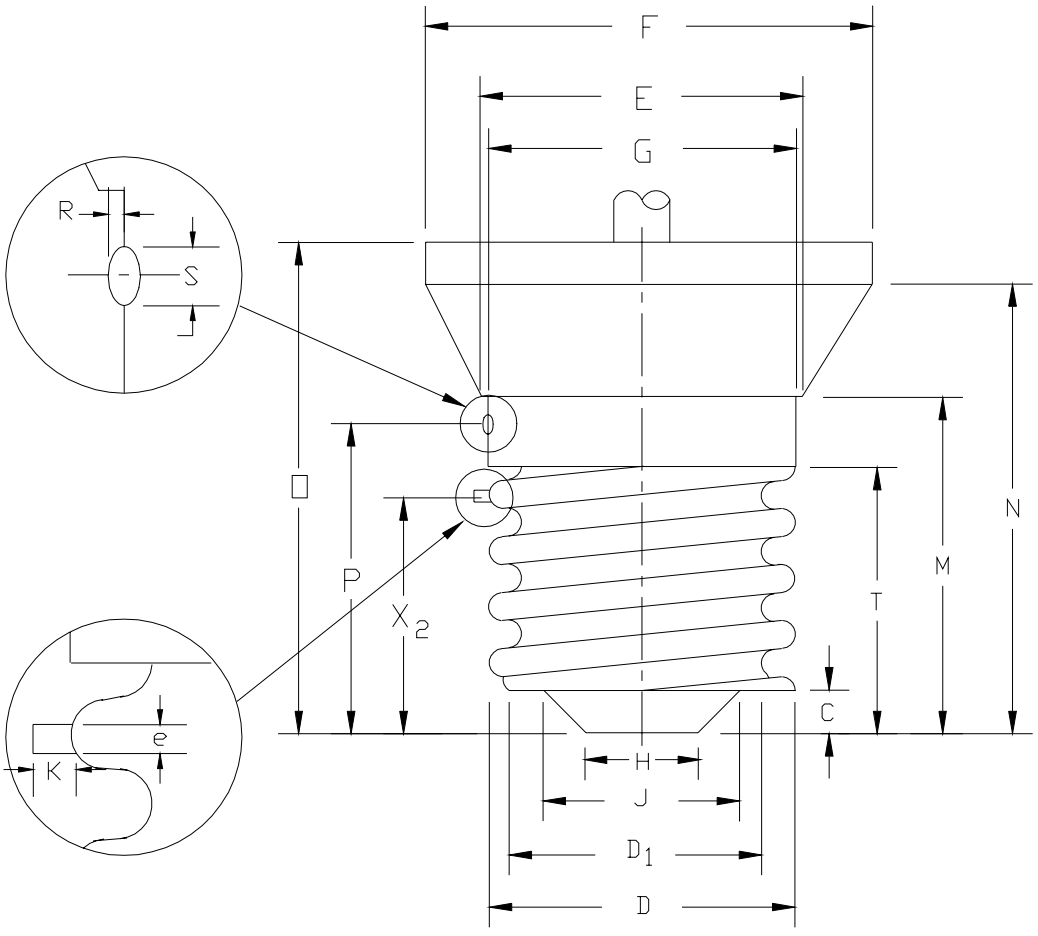
Testing
Push the base of the lamp into the gauge until it stops and check the relationship of surfaces w and v. Also, check for the presence of any conductive material above surface x.

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Threaded Gauge for Testing Minimum Insertion Clearance of EP39 Position-Oriented Mogul-Screw Lampholders

The drawing is intended only to illustrate essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C	0.187	-0.0005	4.75
D	1.558	+0.0012	39.56
D_1	1.458	+0.0012	37.02
E	1.700	+0.002	43.18
F	2.500	+0.002	63.50
G	1.620	+0.001	41.15
H	0.610	-0.002	15.49
J	1.250	-0.002	31.75
K	0.093	+0.001	2.36
M	1.611	-0.002	40.92
N	2.211	-0.002	56.16
O	2.400	±0.005	60.96
P	1.500	+0.005	38.10
R	0.035 (Note)	+0.001	0.89 (Note)
S (dia)	0.100	+0.005	2.54
T	1.187	-0.002	30.15
X_2	1.050	+0.001	26.67
e	0.095	±0.0005	2.41
NOTE - Future objective: 0.040 in (1.02mm).			

The form of the screw threads shall be in accordance with the dimensions shown in ANSI_IEC C81.62, Standard Sheet 2-202.

Purpose
To check lampholders for clearance of maximum-length bases.

For details of EP39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-202.

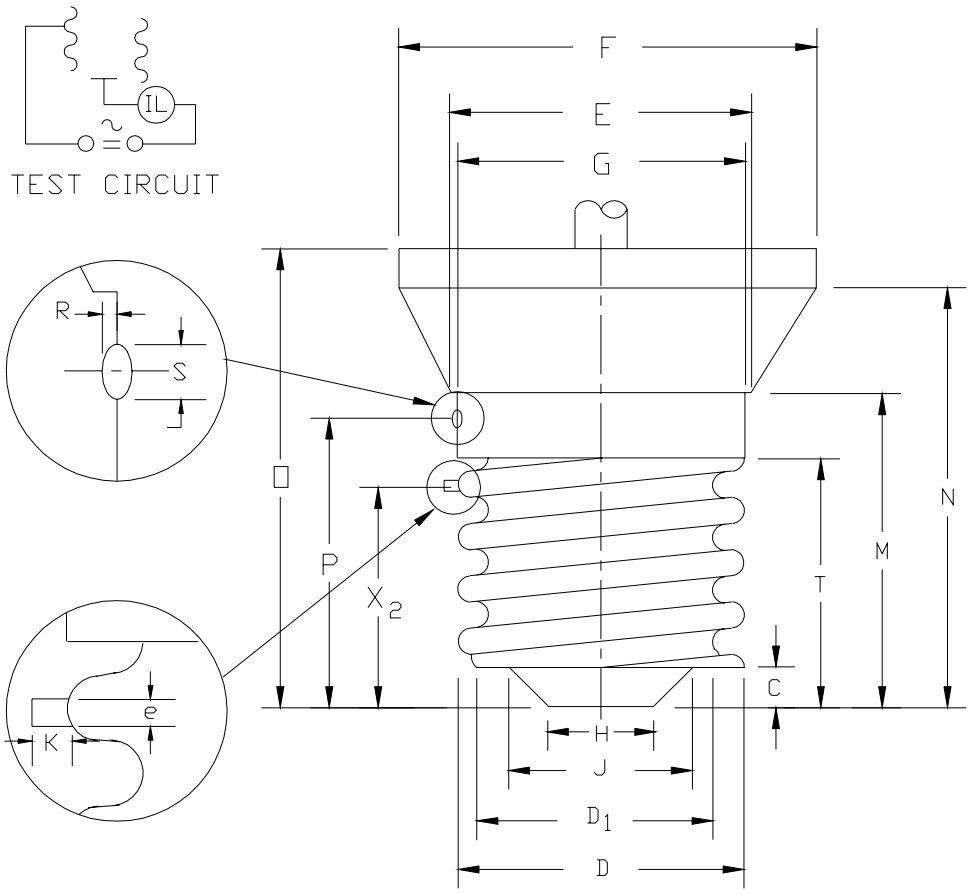
Testing
Screw the gauge into the lampholder until the pin engages in the pin-lock stop.

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Threaded Gauge for Testing Contact-Making of EP39 Position-Oriented Mogul-Screw Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C	0.187	-0.0005	4.75
D	1.558	+0.0012	39.56
D_1	1.458	+0.0012	37.02
E	1.700	+0.002	43.18
F	2.500	+0.002	63.50
G	1.620	+0.001	41.15
H	0.610	-0.002	15.49
J	1.250	-0.002	31.75
K	0.093	+0.001	2.36
M	1.611	-0.002	40.92
N	2.211	-0.002	56.16
O	2.400	±0.005	60.96
P	1.500	+0.005	38.10
R	0.035 (Note)	+0.001	0.89 (Note)
S (dia)	0.100	+0.005	2.54
T	1.187	-0.002	30.15
X_2	1.000	+0.001	23.40
e	0.095	±0.0005	2.41
NOTE - Future objective: 0.040 in (1.02mm).			

The form of the screw threads shall be in accordance with the dimension shown in ANSI_IEC C81.62, Standard Sheet 2-202.

Purpose
To check lampholders for contact-making with a finished lamp.

For details of EP39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-202.

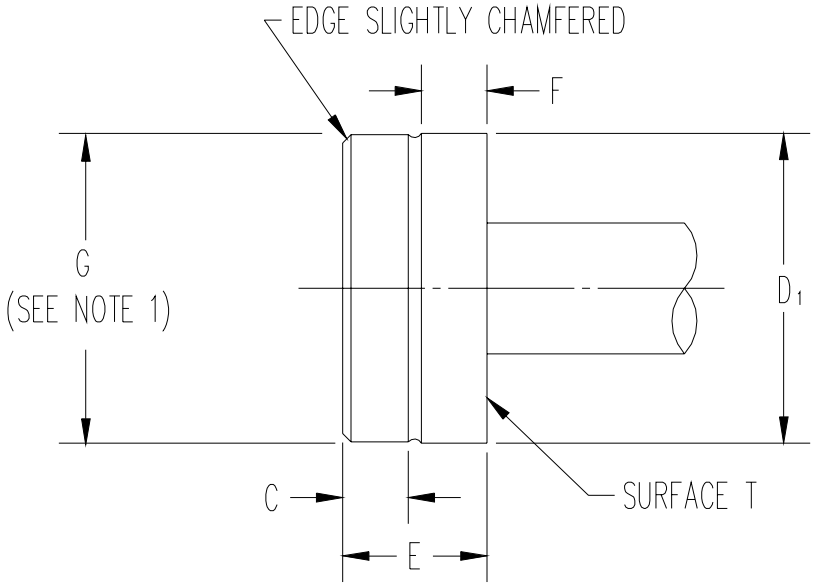
Testing
Screw the gauge fully into the holder, up to the pin-engaging lock, and check the indicator lamp (IL).

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"No-Go" Plug Gauge for EP39 and EX39 Mogul-Screw Lampholders

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C	0.312	-0.005	7.92
D_1	1.477	+0.0005	37.52
E	0.687	±0.005	17.45
F	0.312	-0.005	7.92
G (Note 1)	1.465	-0.001	37.21

Notes
1 For centering purposes only.

The mass of the gauge shall be at least 680 g (23.985 oz) and not more than 900 g (31.746 oz).

Purpose
To check the maximum of the minor diameter D_1 of the screw threads

For details of EX39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-210.
For details of EP39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-202.

Testing
Attempt to insert the gauge into the lampholder and check the relationship of the thread to surface T.

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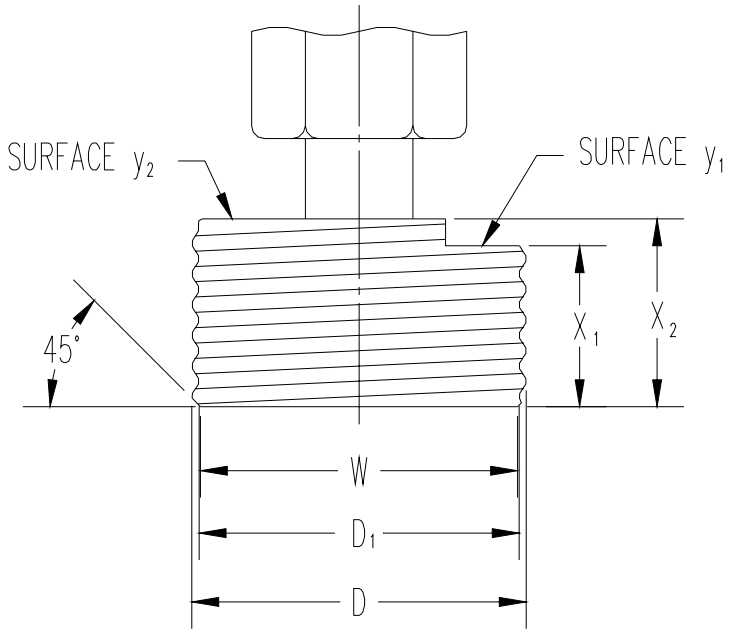
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Threaded "Go" Gauge for EX39 Mogul-Screw Lampholders

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	1.565	-0.0012	39.75
D_1	1.465	-0.0012	37.21
W	1.425	±0.001	36.20
X_1	0.875	-0.001	22.23
X_2	0.937	+0.001	23.80

The form of the screw threads shall be in accordance with the dimensions shown in ANSI_IEC C81.62, Standard Sheet 2-210.

Purpose
To check the minimum dimensions of the lampholder screw thread and the minimum and maximum values of dimension "Z". This gauge is not intended for use as a torque-testing device.

Testing
Screw the gauge into the lampholder and check the relationship of the threaded portion of the holder with surfaces y_1 and y_2.

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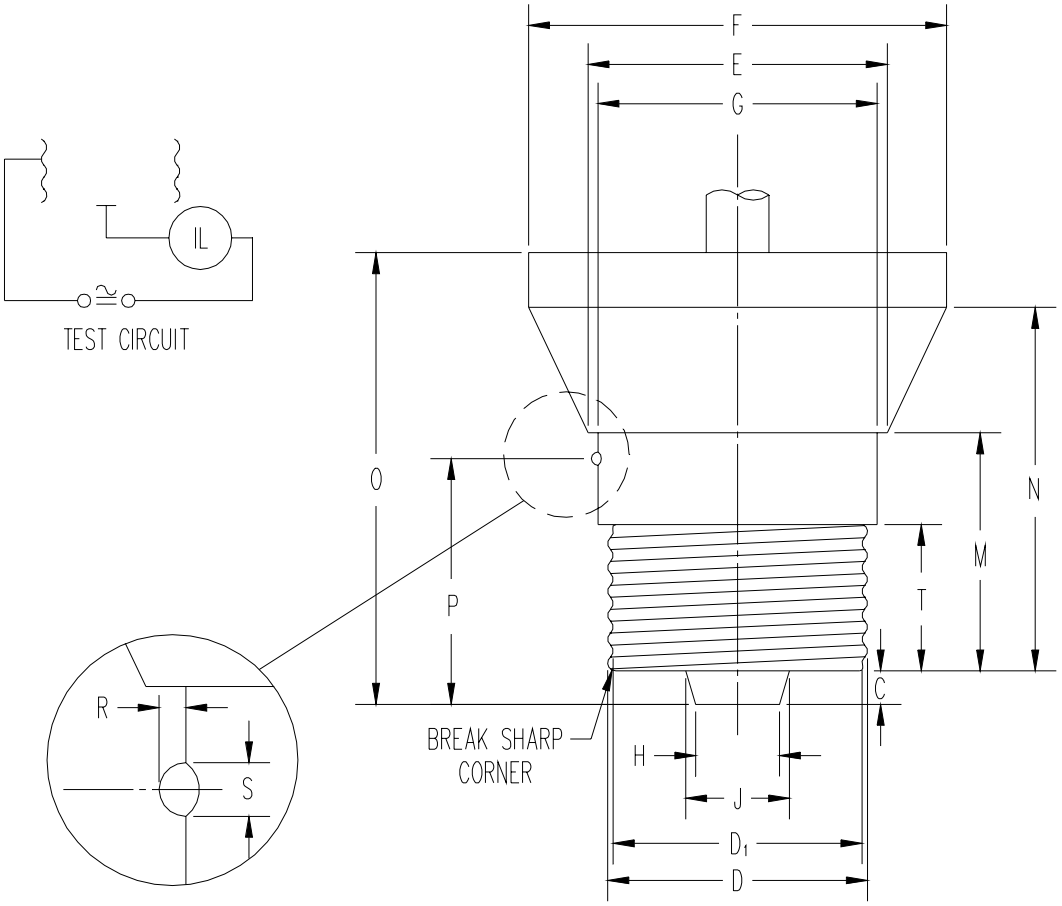
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Threaded Gauge for Testing Contact-Making of EX39 Mogul-Screw Lampholders

The drawing is intended only to illustrate essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C	0.218	-0.0005	5.54
D	1.558	+0.0012	39.56
D_1	1.458	+0.0012	37.02
E	1.700	+0.002	43.18
F	2.500	+0.002	63.50
G	1.620	+0.001	41.15
H	0.410	-0.002	10.41
J	0.500	-0.002	12.70
M	1.423	-0.002	36.14
N	2.024	-0.002	51.41
O	2.500	+0.005	63.50
P	1.500	+0.005	38.10
R (Note 1)	0.035	+0.001	0.89
S (dia)	0.100	+0.005	2.54
T	0.968	-0.002	24.59

Notes
1 Future objective: 0.040 in (1.02 mm)

The form of the screw threads shall be in accordance with the dimensions shown in ANSI_IEC C81.62, Standard Sheet 2-210.

Purpose
To check lampholder dimensions for contact making with a finished lamp.

For details of the EX39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-210.

Testing
Screw the gauge fully into the lampholder and check the indicator lamp. Also, check the clearance between the gauge and the upper edge of the holder with the appropriate feeler gauge.

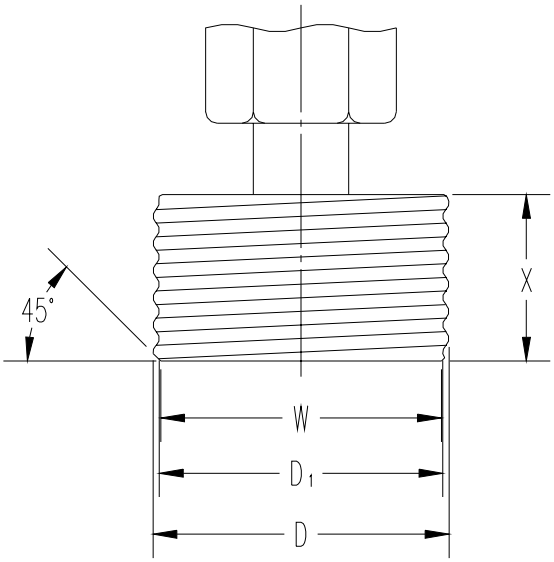
Note: The sharp part of the edge of the thread at the underside of the gauge shall be broken with a radius of approximately 0.020 in (0.50 mm).

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Threaded Minimum Torsion Test Device for EX39 Mogul-Screw Lampholders with Shell Grip Feature

The drawing is intended only to illustrate essential dimensions of the gauge.



Threaded Surface Hardness:
Rockwell C60 Minimum

Threaded Surface Finish:
8 Microinches

Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	1.537	+0.0012	39.04
D_1	1.437	+0.0012	36.50
W	1.425	±0.001	36.20
X	.875	±0.020	22.22

Notes
1 The form of the screw threads shall be in accordance with the dimensions shown on ANSI_IEC C81.61, Standard Sheet 2-210.

Purpose

To check the removal and unintentional loosening characteristics of a finished lamp from a new, unused, fully-assembled lampholder with shell gripping features. This test is not appropriate for used and weathered holders that may have uncontrolled characteristics contributing to the insertion torque. This test does not apply to lampholders that employ gripping action at locations other than the screw shell of the lamp base.

For details of the EX39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-210.

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Testing

This test is to be made after the lampholder under test has been evaluated by the test plug shown in Standard Sheet 3-191. The center contact may be removed for test purposes if interference with dimension H still occurs.

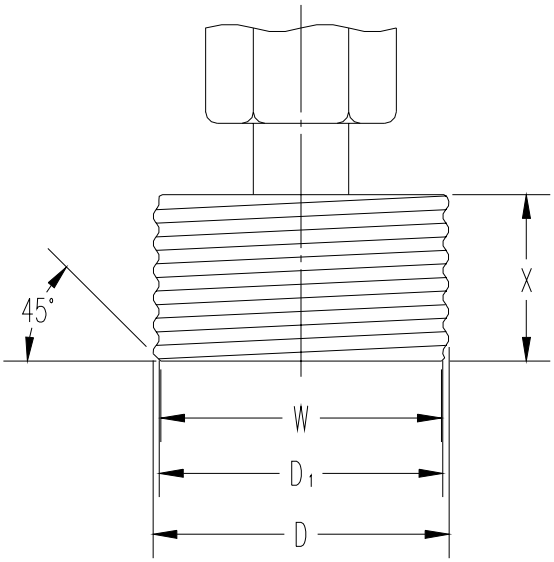
A calibrated torque wrench is required as equipment in addition to this testing plug. After inserting the device fully into the lampholder, the specified minimum torque shall be applied to remove it.

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Threaded Maximum Torsion Test Device for EX39 Mogul-Screw Lampholders with Shell Grip Feature

The drawing is intended only to illustrate essential dimensions of the gauge.



Threaded Surface Hardness:
Rockwell C60 Minimum

Threaded Surface Finish:
8 Microinches

Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	1.553	-0.0012	39.44
D_1	1.453	-0.0012	36.90
W	1.425	±0.001	36.20
X	.875	±0.020	22.22

Notes
1 The form of the screw threads shall be in accordance with the dimensions shown on ANSI_IEC C81.61, Standard Sheet 2-210.
2 This test plug is designed to simulate an unmounted EX39 mogul screw base. Dimension D (1.553 in [39.44 mm]) is used because the allowance to 1.558 in (39.58 mm) for out-of-roundness of a base on a finished lamp (as shown in ANSI_IEC C81.63, Standard Sheet 1-210) probably can be absorbed by flexure of the gripping system.

Purpose

To check that a maximum base on a finished lamp can be inserted into a new, unused, fully-assembled lampholder with shell gripping features. This test is not appropriate for used and weathered holders that may have uncontrolled characteristics contributing to the insertion torque. This test does not apply to lampholders that employ gripping action at locations other than the screw shell of the lamp base.

For details of the EX39 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-210.

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Testing
The lampholders shall be tested as follows. A calibrated torque wrench shall be used as equipment.

1 Start screwing the test plug into the lampholder by hand. It shall be possible to screw the plug until fully seated without exceeding the specified torque value.

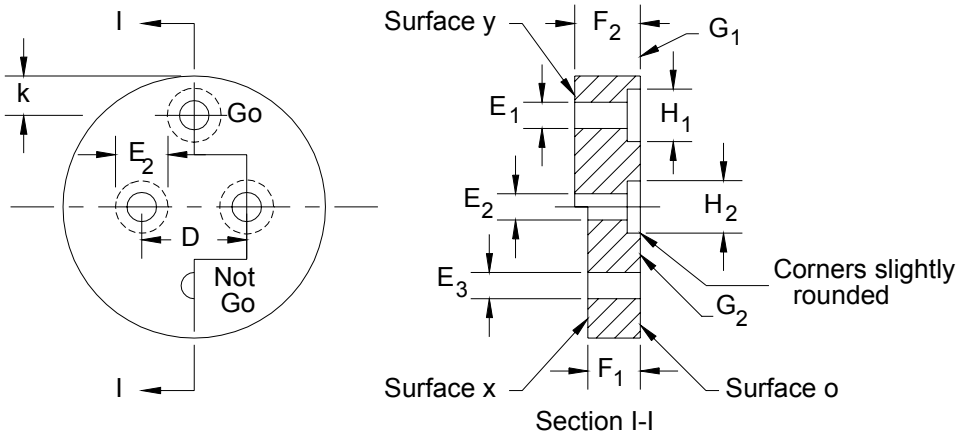
2 After completing step 1, without changing the position of the test service, it shall be possible to remove the plug from the lampholder without exceeding the specified removal torque value.

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"Go" and “Not-Go” Gauge for G5 Miniature Bipin Bases on Finished Lamps

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.187	±0.0002	4.75
E_1	0.105	+0.0004	2.67
E_2	0.110	+0.0004	2.79
E_3	0.090	-0.0004	2.29
F_1	0.260	-0.001	6.60
F_2	0.300	+0.001	7.62
G_1	0.034	+0.005	0.86
G_2	0.039	±0.005	1.0
H_1	0.130	+0.005	3.30
H_2	0.157	±0.005	4.0
k	0.118	max.	3

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Std Sheet 3-310-2
Page 2 of 2

Purpose
For the control of dimensions $E_{min.}$, $E_{max.}$, $F_{min.}$, $F_{max.}$, and the combined pin diameter and displacement of pins (including bosses) of miniature bipin bases.

For details of G5 Base, see ANSI_IEC C81.61 Standard Sheet 1-310.

Testing
With a force not exceeding 1 lb. (4.45N) fully insert the base pins into the two gauge holes, E_2, at surface o until the base face and gauge are in contact. Check the relationship of the pins to surface x and surface y.

Insert each individual pin into hole E_1 at surface o until the face of the base and the surface of the gauge are in contact.

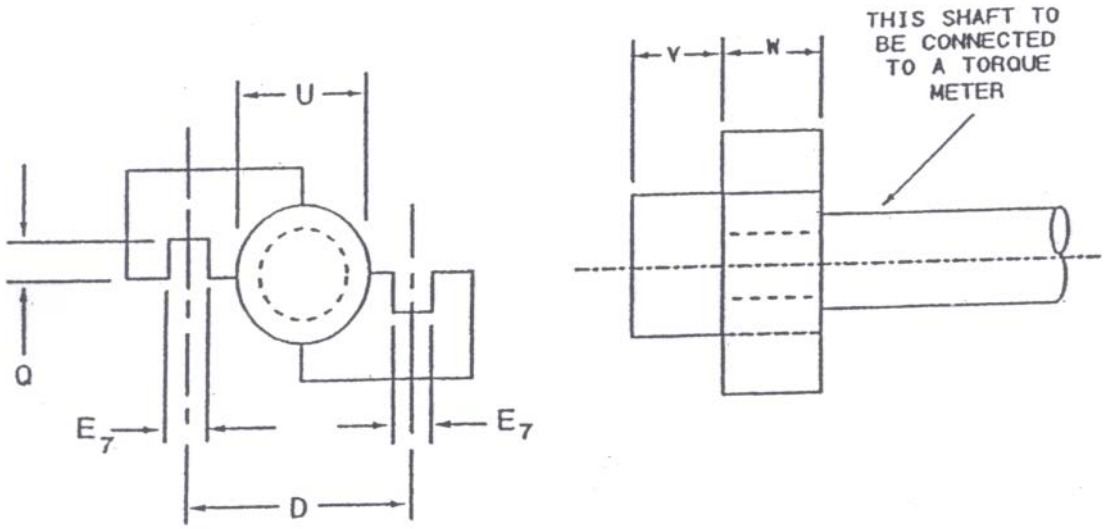
Attempt to insert each pin into hole E_3.

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Pin Torsion Test Device for G5 Miniature Bipin Base

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.187	±0.001	4.75
E_7	0.120	±0.005	3.05
Q	0.050	±0.005	1.27
U	0.031	±0.010	0.79
V	0.180	±0.002	4.57
W	0.025	±0.010	6.35
NOTE For base design where the space between pins in on a plane different than the “base face” plane, adjustment to dimensions “V” and/or “U” may be necessary.			

Purpose

To provide a standard means of applying a torsion test to the contact pins.

For details of G5 bases, see ANSI_IEC C81.61, Standard Sheet 1-310.

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Testing

With the test lamp in line with the axis of the shaft of the test device, insert the base pins into the E_7 grooves. Press the base face against the end of the spacer "V" to assure application of the test torque at the proper distance along the base pins. Manually apply a rotational force to the lamp to force the pins into the E_7 grooves. Continue to apply torque to the lamp to reach the value specified on the base sheet on the torque meter and maintain that value for the specified time.

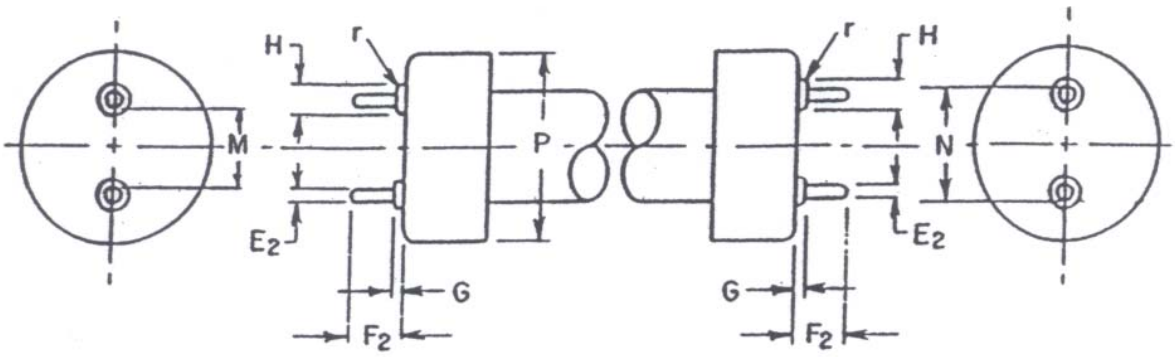
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"Go" Gauges for G5 Miniature-Bipin Lampholders

Two separate double-ended gauges are required: a minimum pin-spacing gauge and a maximum pin-spacing gauge.

The drawing is intended only to illustrate essential dimensions of the gauge.



MINIMUM PIN SPACING GAUGE

MAXIMUM PIN SPACING GAUGE

Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
E_2	0.096	-0.0004	2.44
F_2	0.265	-0.001	6.73
G	0.030	-0.0004	0.76
H	0.130	-0.0004	3.3
M	0.082	+0.0005	2.1
N (Note 1)	0.292	-0.0005	7.42
P	0.61	approx	15.5
r	0.015	+0.003	0.38

NOTES
1 The spacing shown is the objective for future design. It is recognized that some designs will not accept a gauge having a dimension N greater than 0.278 in.
2 Pin ends are hemispherical in shape.
3 Pins should be of hardened steel.

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Purpose
To check that lampholders will accept and permit removal of lamps having either minimum spacing between the pins or maximum spacing across the pins.

For details of G5 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-310.

Testing
Insert the minimum and maximum pin-spacing gauges in sequence into the lampholder and check for the contact of the gauge face to the holder face.

Check lampholders for good engagement with the pins of the minimum spacing gauge after having been tested with the gauge having pins set at maximum spacing.

During the above procedure, check for contact between the gauge faces and holder faces, ease of insertion and removal and engagement of pins of the minimum spacing gauge with the lampholder contacts.

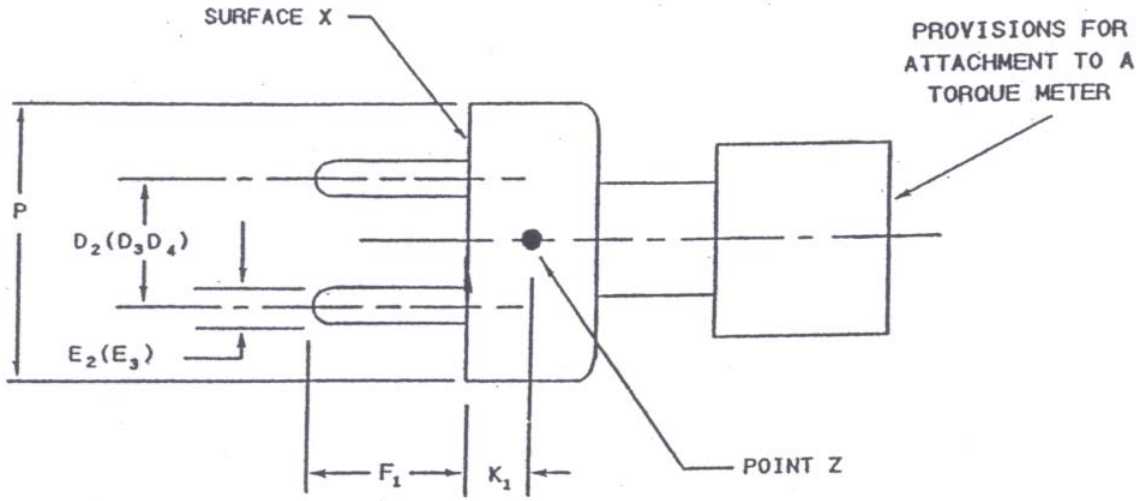
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Torsion Test Devices for G5 Miniature Bipin Lampholder

In making tests on individual inflexible (rigidly fixed) lampholders as called for on ANSI_IEC C81.62 Standard Sheet 2-310, the torque or force is applied by means of test devices, which simulate bases on finished lamps. Three similar test devices are required. They are referred to as Device A, Device B, and Device C; they differ only in respect to pin diameter and spacing. Device A simulates a base with maximum diameter pins at minimum spacing. Device B simulates minimum diameter pins at maximum spacing. Device C simulates minimum diameter pins at nominal spacing.

The drawing is intended only to illustrate the essential dimensions of the gauges.



Reference	Standard Dimensions			Tolerance (inches)	Nearest Metric Equivalent (millimeters)
	Device A (inches)	Device B (inches)	Device C (inches)		
D_2	0.177	-	-	±0.0003	4.50
D_3	-	0.206	-	±0.0003	5.23
D_4	-	-	0.187	±0.0003	4.75
E_2	0.096	-	-	±0.0004	2.44
E_3	-	0.090	0.090	±0.0004	2.29
F_1	0.240	0.240	0.240	+0.010	6.10
K_1	0.250	0.250	0.250	approx	6.35
P	0.610	0.610	0.610	approx	15.49

NOTES
1 Pin ends shall be hemispherical in shape.
2 Pins shall be made of hardened steel.
3 Point Z is located on the circumference, dimension P in a place running along the axis of the device and perpendicular to the plane through the pins.
4 Provide means of attaching a pull scale at point Z and the opposite end.

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Purpose
To provide standard means of applying torsion tests to inflexible rotational holders specified for the lampholder on Standard Sheet 2-310.

For details of G5 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-310.

Testing
Use Device A and Device B, in sequence, in each lampholder under test.

A calibrated torque meter is required for making this test, in addition to the test devices.

Insert the test device until surface x is in contact with the face of the holder. Torque may be applied to either the test device of the lampholder, the other being rigidly mounted. Maintain the test device in position perpendicular to the holder face, during the test. Measurements shall be made during the insertion motion and withdrawal motion. The readings shall comply with the appropriate limits for inflexible, rotational holders specified for the lampholder on ANSI_IEC C81.62, Standard Sheet 2-310.

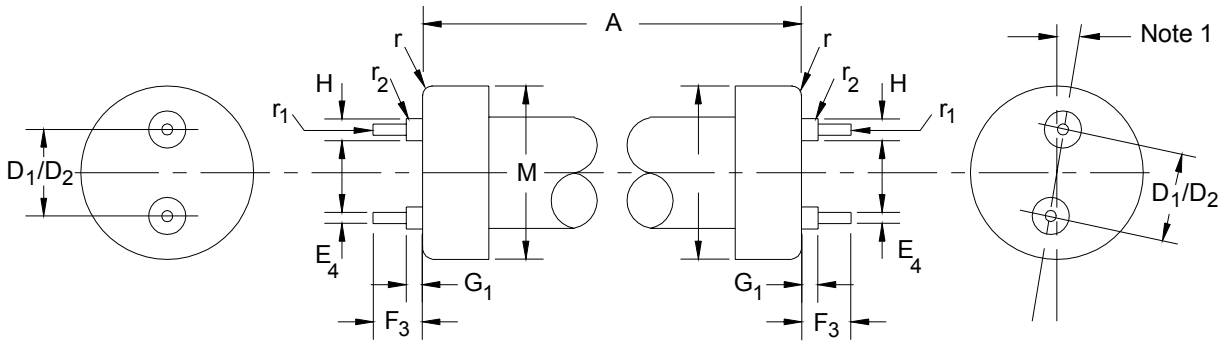
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Double-ended "Go" Gauges for a Combined Pair of G5 Miniature Bipin Lampholders Mounted at Minimum Spacing

The drawing is intended only to illustrate essential dimensions of the gauge.

Two gauges, Gauge I and Gauge II, are required.



Gauge 1: Displacement

Reference	Standard Dimensions (inches) Gauge I	Gauge II	Tolerance (inch)	Nearest Metric Equivalent (millimeters)
A (Note 2)	5.35	5.35	+0.002	135.9
D_1	0.177	-	-0.0004	4.5
D_2	-	0.196	+0.0004	5.0
E_4	0.100	0.100	+0.0004	2.54
F_3	0.280	0.280	+0.0004	7.1
G_1	0.034	0.034	+0.0004	0.86
H	0.130	0.130	+0.0004	3.3
M	0.630	0.630	±0.004	16.0
r	0.020	0.020	±0.004	0.5
r_1	0.020	0.020	±0.001	0.5
r_2	0.015	0.015	-0.002	0.38

NOTES
1 The plane containing the axes of the pins at one end is displaced from true alignment with the plane containing the axes of the pins at the other end. Gauge I shall have clockwise displacement, as shown above, and Gauge II shall have counter-clockwise displacement. The angle of displacement shall be such that each gauge can just be inserted, without undue force, into two parallel slots, each 0.113 inch (2.87mm) in width.
2 For convenience, this value is equal to dimension $A_{max.}$ of a 4-watt, 6-inch, T16 (T5) fluorescent lamp.
3 Pins shall be of hardened steel.

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Purpose
To check a combined pair of flexible or inflexible G5 lampholders to ascertain that at the manufacturer's recommended minimum spacing they will accept a lamp of maximum length and with maximum rotational misalignment between the planes of the base pins at the two ends of the lamp.

For details of G5 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-310.

Testing
Mount the pair of lampholders at the minimum distance according to the lampholder manufacturer's instructions. Insert and remove each gauge smoothly.

Note: When testing a combined pair of lampholders mounted in a luminaire, the value of dimension A shall be equal to dimension $A_{max.}$ of the related lamps, with a tolerance of +0.0002 inch (0.05mm).

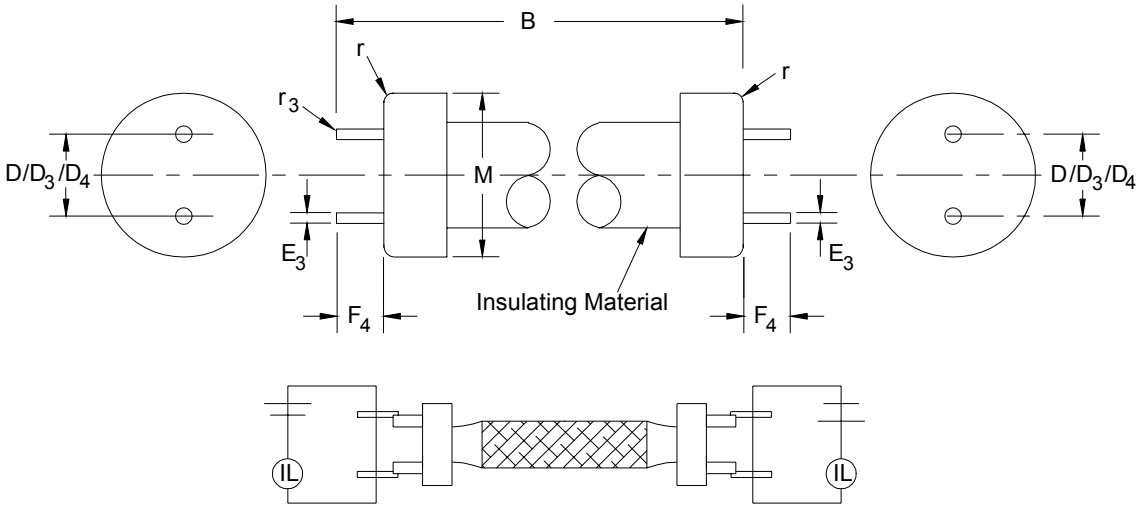
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Double-ended Gauges for Testing Contact Making for a Combined Pair of G5 Miniature Bipin Lampholders Mounted at Maximum Spacing

The drawing is intended only to illustrate essential dimensions of the gauge.

Three gauges are required: Gauges III, IV, and V.



Test Circuit

Reference	Standard Dimensions (inches) Gauge III	Gauge IV	Gauge V	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
B (Note 1)	5.53	5.53	5.53	-0.002	140.6
D_3	0.167	-	-	-0.0004	4.25
D	-	0.187	-	±0.0002	4.75
D_4	-	-	0.206	+0.0004	5.25
E_3	0.090	0.090	0.090	-0.004	2.29
F_4	0.260	0.260	0.260	-0.0004	6.6
M	0.630	0.630	0.630	±0.004	16
r	0.020	0.020	0.020	±0.004	0.5
r_3	0.016	0.016	0.016	±0.001	0.4
Mass	7.05oz.	7.05oz.	7.05oz.	±10%	0.2kg

NOTES
1 When testing a combined pair of holders mounted in a luminaire, the value of gauge dimension B shall be equal to dimension $B_{min.}$ of the related lamps, with a tolerance –0.002 inches (0.05mm). For the value of dimension $B_{min.}$ of the lamps, see ANSI_IEC C81.61. For example, this value is equal to dimension $B_{min.}$ of a 4-watt, 6-inch T16 (T5) fluorescent lamp.
2 Pins should be of hardened steel.

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Purpose
To check a combined pair of flexible or inflexible G5 lampholders to ascertain that at their maximum permissible spacing, as recommended by the manufacturer, they will make contact with all four pins of a minimum length lamp.

For details of G5 lampholders, see ANSI_IEC C81.62 Standard Sheet 2-310.

Testing
Mount the pair of lampholders at the maximum distance according to the lampholder manufacturer's instruction.

Insert each of the three gauges, in turn, while observing the indicator lamp (IL) of the test circuit.

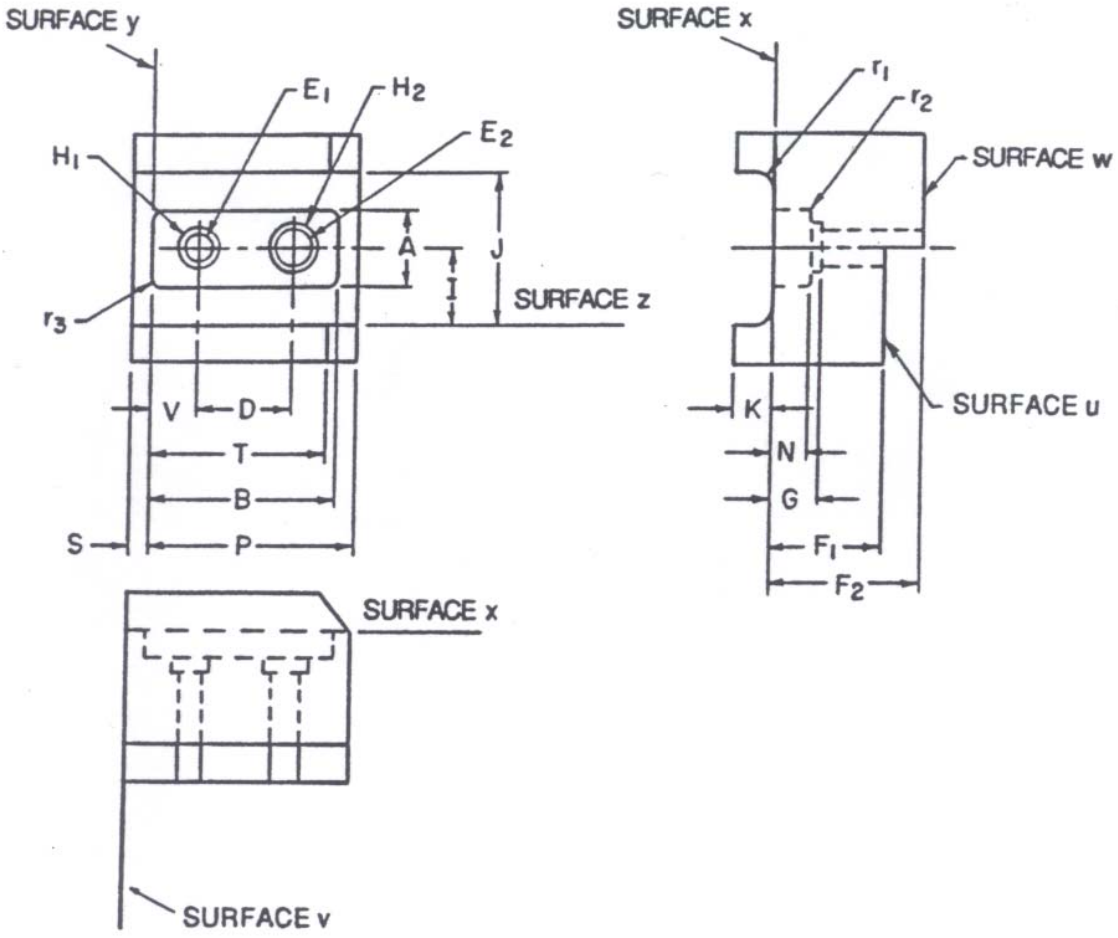
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"Go" Gauges for G7.9- and GX7.9-Based Lamps

Two separate gauges are required. The G7.9 and GX7.9 gauges differ with respect to the arrangement of the holes. The drawing shows the G7.9 version. The GX7.9 gauge has the large and small holes interchanged.

The drawing is intended only to illustrate essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.278	+0.001	7.06
B	0.622	+0.001	15.80
D	0.312	±0.001	7.92
E_1 (dia) (Note 1)	0.108	+0.001	2.74
E_2 (dia) (Note 1)	0.140	+0.001	3.56
F_1	0.526	-0.001	13.36
F_2	0.575	+0.001	14.61
G	0.167	+0.001	4.24
H_1 (dia) (Note 1)	0.145	+0.001	3.68
H_2 (dia) (Note 1)	0.190	+0.001	4.83
I	-	-	-
J	0.563	+0.001	14.30
K	0.152	-0.001	3.86
N	0.123	+0.001	3.12
P	0.708	-0.001	17.98
S	0.107	+0.001	2.72
T	0.600	+0.001	15.24
V	0.157	+0.001	3.99
r_1	0.046	-0.001	1.17
r_2	0.021	-0.001	0.53
r_3	0.057	-0.001	1.45

Notes
1 The diameter of these holes is 0.010 in (0.25mm) larger than the maximum pin, or pin boss, diameter, in order to allow for variations in pin spacing and alignment.
2 Dimension I = J/2.

Purpose
To check maximum dimensions of the base (dimensions A, B, E_1, E_2, G, H_1, H_2, J, K, N, S, V, and r_3) and maximum and minimum pin length.

For details of the G7.9 and GX7.9 bases, see ANSI_IEC C81.61, Standard Sheet 1-356.

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Testing
The individual pin diameters are to be checked with an appropriate ring gauge.

Then, insert the base in the appropriate gauge and check for contact between reference plane X of the base and surface x of the gauge. If and when the base is fully seated, check the relation of the pin ends of both pins with surfaces u and w.

To check dimension S of the base, press the base so that its surface y is in contact with surface y of the gauge. Check to see if the base protrudes beyond surface s. Also, dimension r_3 is checked at this time.

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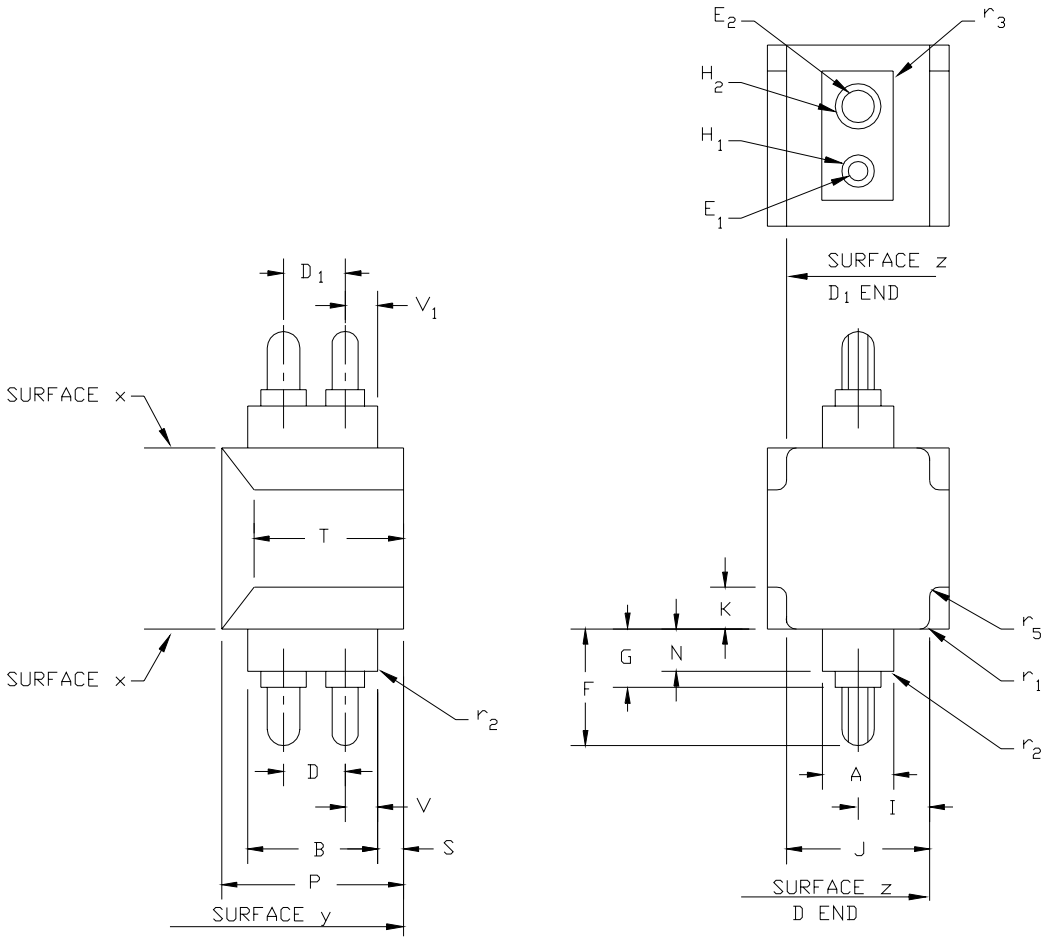
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“Go” Gauges for G7.9 and GX7.9 Lampholders

Two separate gauges are required. The G7.9 and GX7.9 gauges differ with respect to their pin arrangements. The drawing shows the G7.9 version. For the GX7.9, the large and small pins are interchanged.

The drawing is intended only to illustrate essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.284	-0.001	7.21
B	0.630	-0.001	16.00
D	0.01	+0.001	7.65
D_1	0.324	-0.001	8.23
E_1 (dia) (Note 1)	0.098	+0.001	2.40
E_2 (dia) (Note 1)	0.130	+0.001	3.30
F (Note 1)	0.577	-0.001	14.66
G	0.169	-0.001	4.29
H_1 (dia)	0.135	+0.001	3.43
H_2 (dia)	0.180	+0.001	4.57
I (Note 2)	-	-	-
J	0.565	-0.001	14.35
K	0.167	+0.001	4.24
N	0.125	-0.001	3.18
P	0.706	+0.001	17.93
S	0.104	+0.001	2.64
T	0.598	+0.001	15.19
V	0.159	-0.001	4.04
V_1	0.163	-0.001	4.14
r_1	0.044	+0.001	1.12
r_2	0.019	+0.001	0.48
r_3	0.055	+0.001	1.40
r_5	0.016	-0.001	0.41

NOTES
1 Dimensions E_1, E_2 and F apply at both ends of the gauge.
2 Dimension I = J/2.

Purpose
To check the lampholder with respect to the fit of a maximum length with maximum and minimum pin spacings.

For details of the G7.9 and GX7.9 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-356.

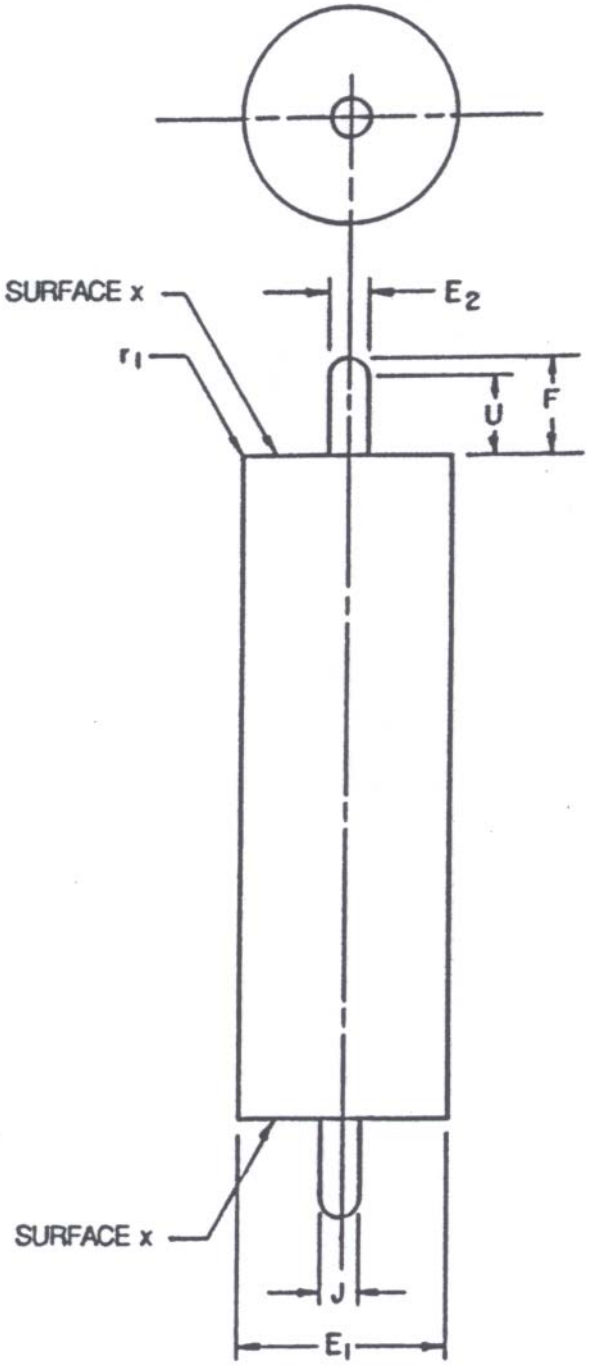
Testing
Insert the maximum and minimum ends of the appropriate gauge into the lampholder and check for contact between surface x of the gauge and reference plan x of the lampholder.

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Minimum Contact Retention Force Gauge for G7.9 and GX7.9 Lampholders

This drawing is intended only to illustrate the essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
E_1	0.091	-0.001	2.31
E_2	0.123	-0.001	3.12
F	0.524	+0.001	13.31
J	0.500	+0.001	12.70
U (Note)	0.461	-0.001	11.71
r_1	0.044	+0.001	1.12
Note Dimension U is the minimum length of the contact-making portion of the pin.			

Mass lb.	Tolerance	Nearest Metric Equivalent kg
1	±10%	0.45

Purpose
To check the minimum retention force of the contacts.

For details of the G7.9 and GX7.9 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-356.

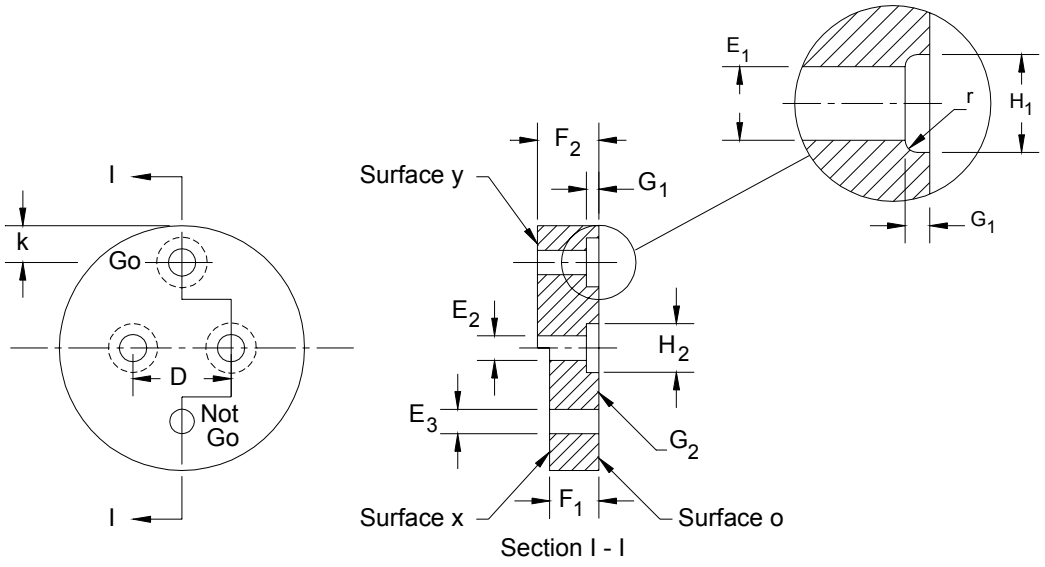
Testing
After first checking the lampholder for acceptance of the “Go" gauge, insert the proper end of this retention gauge into the proper lampholder contacts so that surface x is in contact with reference plane x of the lampholder. With the lampholder held recess-down in a vertical position, check whether the gauge falls out by its own weight.

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"Go" and "Not-Go" Gauge for G13 Medium Bipin Bases on Finished Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.500	±0.0002	12.70
E_1	0.105	+0.0004	2.67
E_2	0.110	+0.0004	2.79
E_3	0.090	-0.0004	2.29
F_1	0.260	-0.001	6.60
F_2	0.300	+0.001	7.62
G_1	0.034	+0.0004	0.86
G_2	0.039	+0.0005	1.0
H_1	0.130	+0.0005	3.30
H_2	0.157	+0.0004	4.0
r	0.015	-.002	0.38
k	0.394	max	10

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Purpose
For the control of dimensions E_{min}, E_{max}, F_{min}, F_{max}, and the combined pin diameter and displacement of pins (including bosses) of G13 medium bipin bases.

For details of G13 Bases, see ANSI_IEC C81.61 Standard Sheet 1-406.

Testing
Insert the base pins into the two gauge holes, E_2, at surface o until the base face and gauge are in contact. Check the relationship of the pins to surface x and surface y.

Insert each individual pin into hole E, at surface o, until the face of the base and the surface of the gauge are in contact.

Attempt to insert each pin into hole E3.

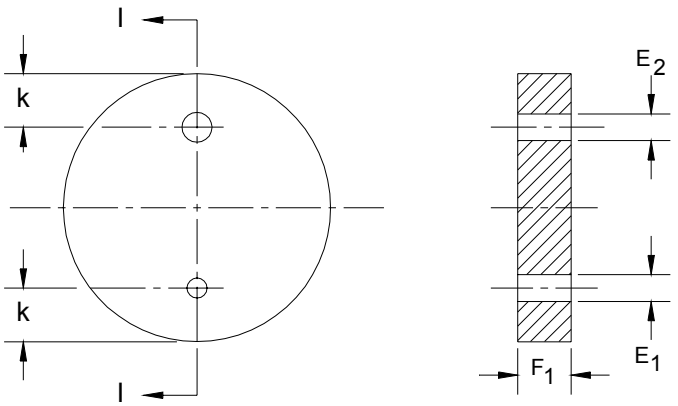
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"Go" and "Not-Go" Gauge for Unmounted G13 Medium Bipin Bases

This gauge is not for use on finished lamps. For appropriate gauge for finished lamps, see Standard Sheet 3-406.

The drawing is intended only to illustrate the essential dimensions of the gauge.



Section I-I

Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
E_1	0.090	-0.0004	2.29
E_2	0.096	+0.0004	2.44
F_1	0.215	approx	5.46
k	0.118	Max	3.0

Purpose
To check the diameters of the cylindrical portions of the pins.

For details of bases, see ANSI_IEC C81.61, Standard Sheet 1-406.

Testing
Insert each individual pin of an unmounted base fully into hole E_2 until the boss contacts the gauge. Attempt to insert each pin into hole E_1.

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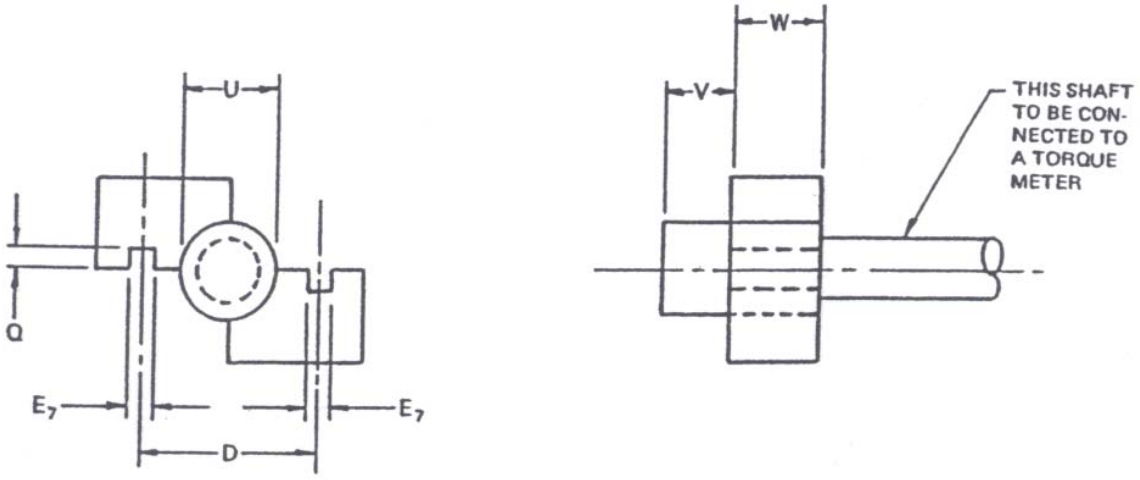
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Pin Torsion Test Device for G13 Medium Bipin Bases

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.500	±0.001	12.70
E_7	0.120	±0.005	3.05
Q	0.050	±0.005	1.27
U (Note)	0.250	±0.010	6.35
V (Note)	0.180	±0.002	4.57
W	0.250	±0.010	6.35

NOTE
For base designs in which the space between pins is on a plane different than the base face plane, adjustment to dimension V or U, or both, may be necessary.

Purpose
To provide a standard means of applying a torsion test to the contact pins.

For details of G13 bases, see ANSI_IEC C81.61, Standard Sheet 1-406.

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Testing

With the test lamp in line with the axis of the shaft of the test device, insert the base pins into the E_7 grooves. Press the base face against the end of the spacer V to assure application of the test torque at the proper distance along the base pins.

Manually apply a rotational force to the lamp to force the pins into the E_7 grooves. Continue to apply torque to the lamp to reach the value specified on the base sheet on the torque meter and maintain that value for the specified time.

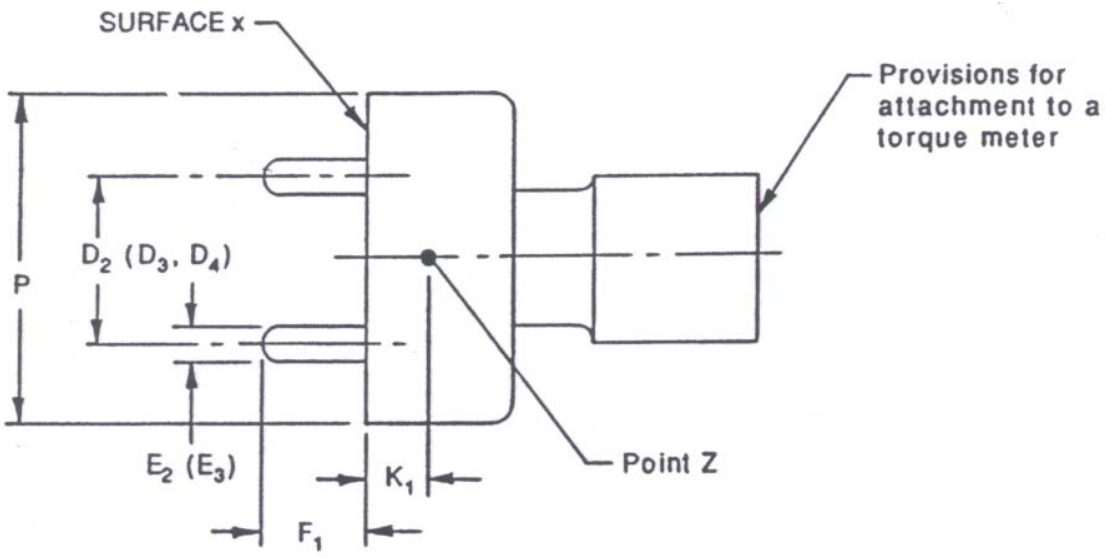
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Torsion Test Device for G13 Medium Bipin Lampholders

In making test on individual inflexible (rigidly fixed) lampholders, as called for in ANSI_IEC C81.62, Standard Sheet 2-406, the torque or force is applied by means of test devices that simulate bases on finished lamps. Three similar test devices are required. They are referred to as Device A, Device B, and Device C; they differ only with respect to pin diameter and spacing. Device A simulates a base with maximum diameter pins at minimum spacing. Device B simulates minimum diameter pins at maximum spacing. Device C simulates minimum diameter pins at nominal spacing.

The drawing is intended only to illustrate the essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)			Tolerance (inches)	Nearest Metric Equivalent (millimeters)
	Device A	Device B	Device C		
D_2	0.491	-	-	±0.0003	12.47
D_3	-	0.515	-	±0.0003	13.08
	-	(Note 1)		-	-
D_4	-	-	0.500	±0.0003	12.70
E_2	0.096	-	-	-0.0004	2.44
E_3	-	0.090	0.090	+0.0004	2.29
F_1	0.240	0.240	0.240	+0.010	6.10
K_1	0.250	0.250	0.250	approx	6.35
P (Notes 2, 3)	1.00	1.00	1.00	approx	25.4

NOTES
1 Future objective: D_3 = 0.520 in (13.21 mm).
2 Point Z is located on the circumference, dimension P_1 in a place running along the axis of the device and perpendicular to the plane through the pins.
3 Provide means of attaching a pull scale at Point Z and the opposite side.
4 Pin ends shall be hemispherical in shape.
5 Pins shall be made of hardened steel.

Purpose
To provide a standard means of applying a torsion test to the lampholder contacts.

For detail of G13 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-406.

Testing
1) *For rotational operation holders:*

a) Use Device A and Device B, in sequence, in each lampholder under test.

b) A calibrated torque meter is required for making this test, in addition to the test devices.

c) Insert the test device until surface x is in contact with the face of the holder. Torque may be applied to either the test device or the lampholder, the other being rigidly mounted. Maintain the test device in a position perpendicular to the holder face, during the test. Measurements shall be made during the insertion motion and withdrawal motion;

d) The readings shall comply with the appropriate limits for inflexible, rotational holders specified for the lampholder on ANSI_IEC C81.62, Standard Sheet 2-406.

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2) *For lateral push-in holders:*

a*)* Each test device shall be used, in sequence, in each lampholder under test;

b) Pull scale is required for making this test, in addition to the test devices;

c) Place the test device in an initial position where surface x is in contact with the face of the holder. Pull the device by a pull scale into the final position in the locking detents of the contacts. Withdrawal is performed by pulling from the opposite side of the test device with the pull scale. Maintain the test device in a position perpendicular to the holder face, during the test. Measurements shall be made during both insertion and withdrawal;

d) The readings shall comply with the limits for inflexible, push-in holders specified for the lampholder on ANSI_IEC C81.62, Standard Sheet 2-406.

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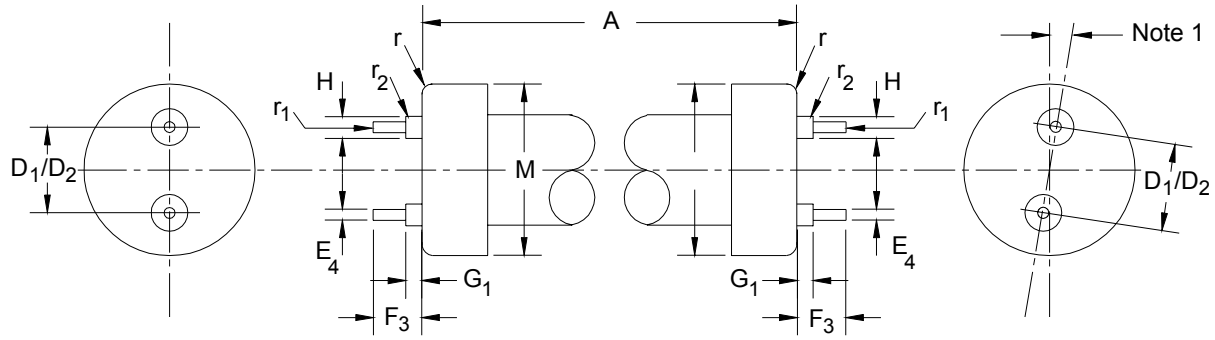
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Double-Ended "Go" Gauges for a Combined Pair of G13 Medium Bipin Lampholders Mounted at Minimum Spacing

The drawing is intended only to illustrate the essential dimensions of the gauge.

Two gauges, Gauge I and Gauge II, are required.



Gauge 1: Displacement

Reference	Standard Dimensions (inches) Gauge I	Gauge II	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A (Note 2)	17.22	17.22	+0.002	437.4
D_1	0.490	-	-0.0004	12.45
D_2 (Note 3)	-	0.505	+0.0004	12.83
E_4	0.100	0.100	+0.0004	2.54
F_3	0.280	0.280	+0.0004	7.1
G_1	0.034	0.034	+0.0004	0.86
H	1.130	0.130	+0.0004	3.3
M (Note 4)	1.016	1.016	±0.004	25.8
r	0.020	0.020	±0.004	0.5
r_1	0.020	0.020	±0.001	0.5
r_2	0.015	0.015	-0.002	0.38

NOTES
1 The plane containing the axes of the pins at one end is displaced from true alignment with the plane containing the axes of the pins at the other end. Gauge I shall have clockwise displacement, as shown above, and Gauge II shall have counter-clockwise displacement. The angle of displacement shall be such that each gauge can just be inserted, without undue force, into two parallel slots, each 0.120 inch (3.05mm) in width.
2 For convenience, this value is equal to dimension A_{max} of a 15-watt, 18-inch, T25 (T8) fluorescent lamp.
3 A future objective of 0.510 inch (12.95mm) is under consideration.

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Purpose
To check a combined pair of flexible or inflexible G13 lampholders to ascertain that at the manufacturer's recommended minimum spacing they will accept a lamp of maximum length and with maximum rotational misalignment between the planes of the base pins at the two ends of the lamp.

For details of G13 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-406.

Testing
Mount the pair of lampholders at the minimum distance according to the lampholder manufacturer's instructions. Inset and remove each gauge smoothly.

NOTE - When testing a combined pair of lampholders mounted in a luminaire, the value of dimension A shall be equal to dimension A_{max} of the related lamps, with a tolerance of +0.002 inch (0.05mm).

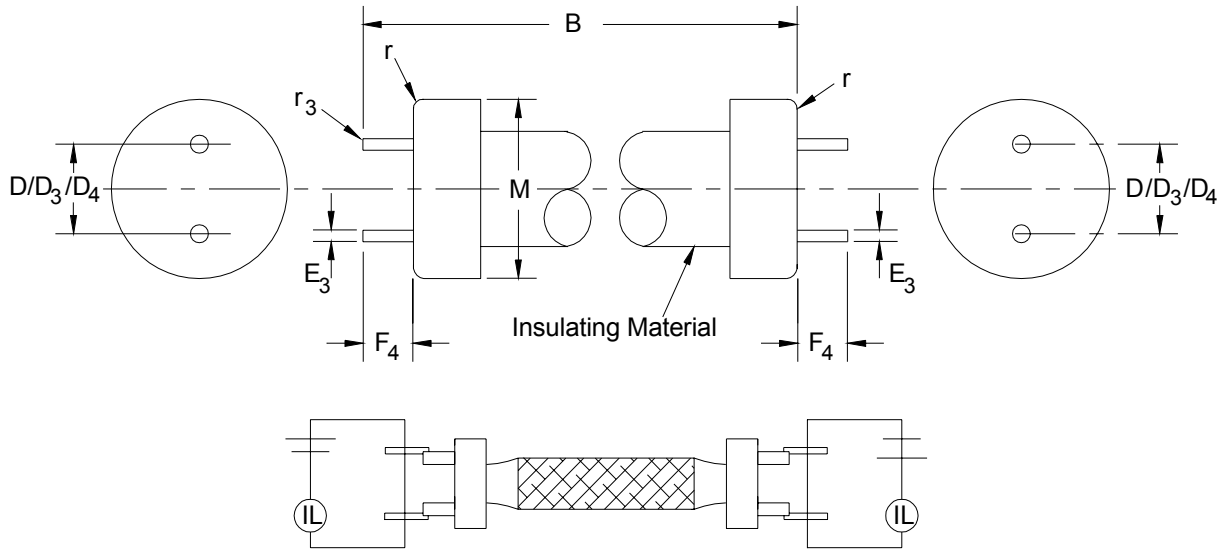
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Double-Ended Gauges for Testing Contact Making for a Combined Pair of G13 Medium Bipin Lampholders Mounted at Maximum Spacing

The drawing is intended only to illustrate the essential dimensions of the gauge.

Three gauges, Gauges III, IV, and V are required.



Test Circuit

Reference	Standard Dimensions (inches) Gauge I	Gauge II	Gauge V	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
B (Note 1)	17.40	17.40	17.40	-0.002	442.0
D_3	0.480	-	-	-0.0004	12.20
D	-	0.500	-	±0.0002	12.70
D_4 (Note 2)	-	-	0.515	+0.0004	13.08
E_3	0.090	0.090	0.090	-0.004	2.29
F_4	0.260	0.260	0.260	-0.0004	6.6
M	1.016	1.016	1.016	±0.004	25.8
r	0.020	0.020	0.020	±0.004	0.5
r_3	0.016	0.026	0.016	±0.001	0.4
Mass	17.6oz	17.6oz	17.6oz	±10%	0.5kg

NOTES
1 For convenience, this value is equal to dimension B_{min} of a 15-watt, 18-inch, T25 (T8) fluorescent lamp.
2 A future objective of 0.520 inch (13.20mm) is under consideration.
3 Pins should be of hardened steel.

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Purpose
To check a combined pair of flexible or inflexible G13 lampholders to ascertain that at their maximum permissible spacing, as recommended by the manufacturer, they will make contact with all four pins of a minimum length lamp.

For details of G13 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-406.

Testing
Mount the pair of lampholders at the minimum distance according to the lampholder manufacturer's instructions. Insert each of the three gauges, in turn, while observing the indicator lamp (IL) of the test circuit.

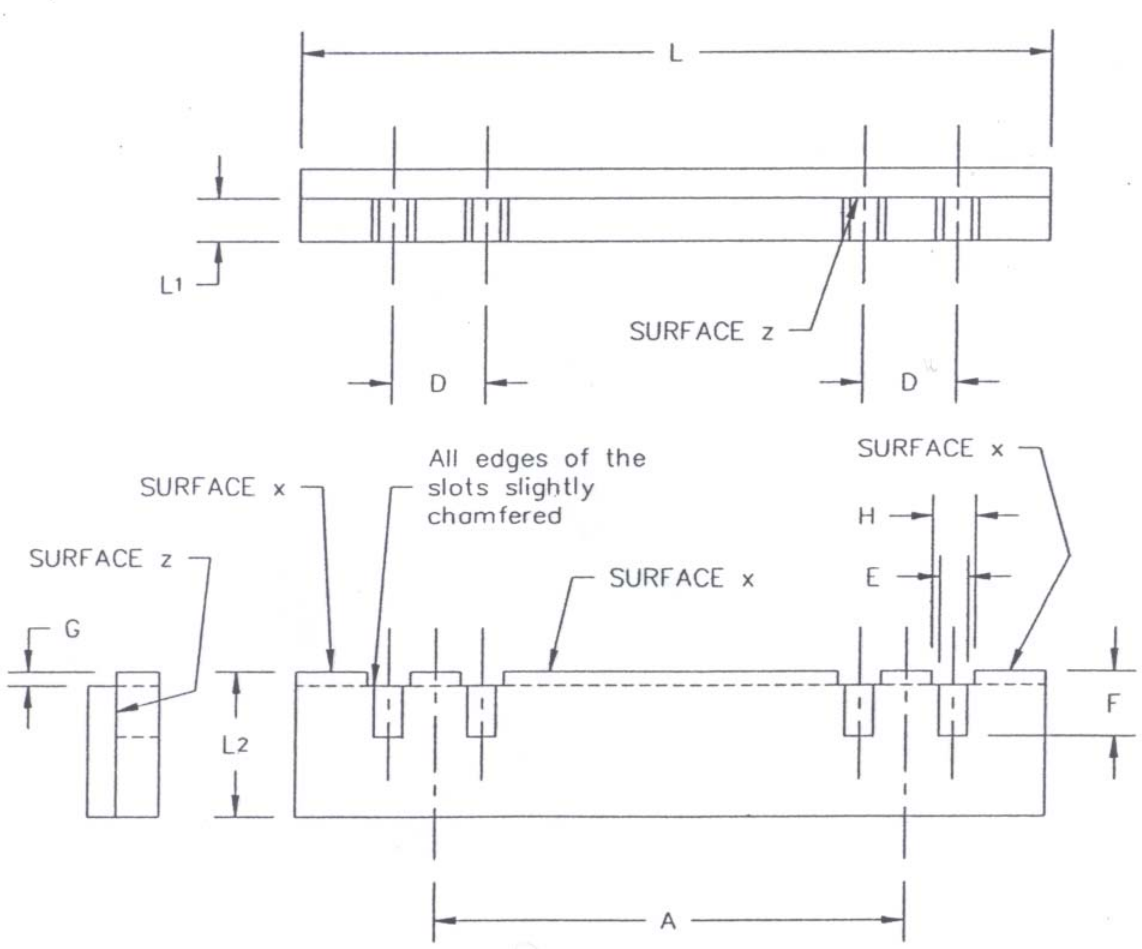
NOTE - When testing a combined pair of lampholders mounted in a luminaire, the value of dimension B shall be equal to dimension B_{min} of the related lamp, with a tolerance of -0.002 inch (-0.05mm).

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"Go" Gauges for 2G13 Bases

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Std Sheet 3-420-2
Page 2 of 2

Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A (2G13-41)	1.625	±0.0004	41.3
(2G13-92)	3.625	±0.0004	92.0
(2G13-152)	6.0	±0.0004	152.4
D	0.5	±0.0004	12.7
E	0.189	+0.0004	4.79
F	0.32	+0.004	8.0
G	0.06	+0.004	1.5
H	0.24	+0.004	6.0
L (2G13-41)	3.0	approx.	81.0
(2G13-92)	5.0	approx.	132.0
(2G13-152)	8.5	approx.	192.0
L_1	0.2	approx.	5.0
L_2	0.7	approx.	18.0

Purpose
To check dimension A of bases.

For details of 2G13 bases, see ANSI_IEC C81.61, Standard Sheet 1-420.

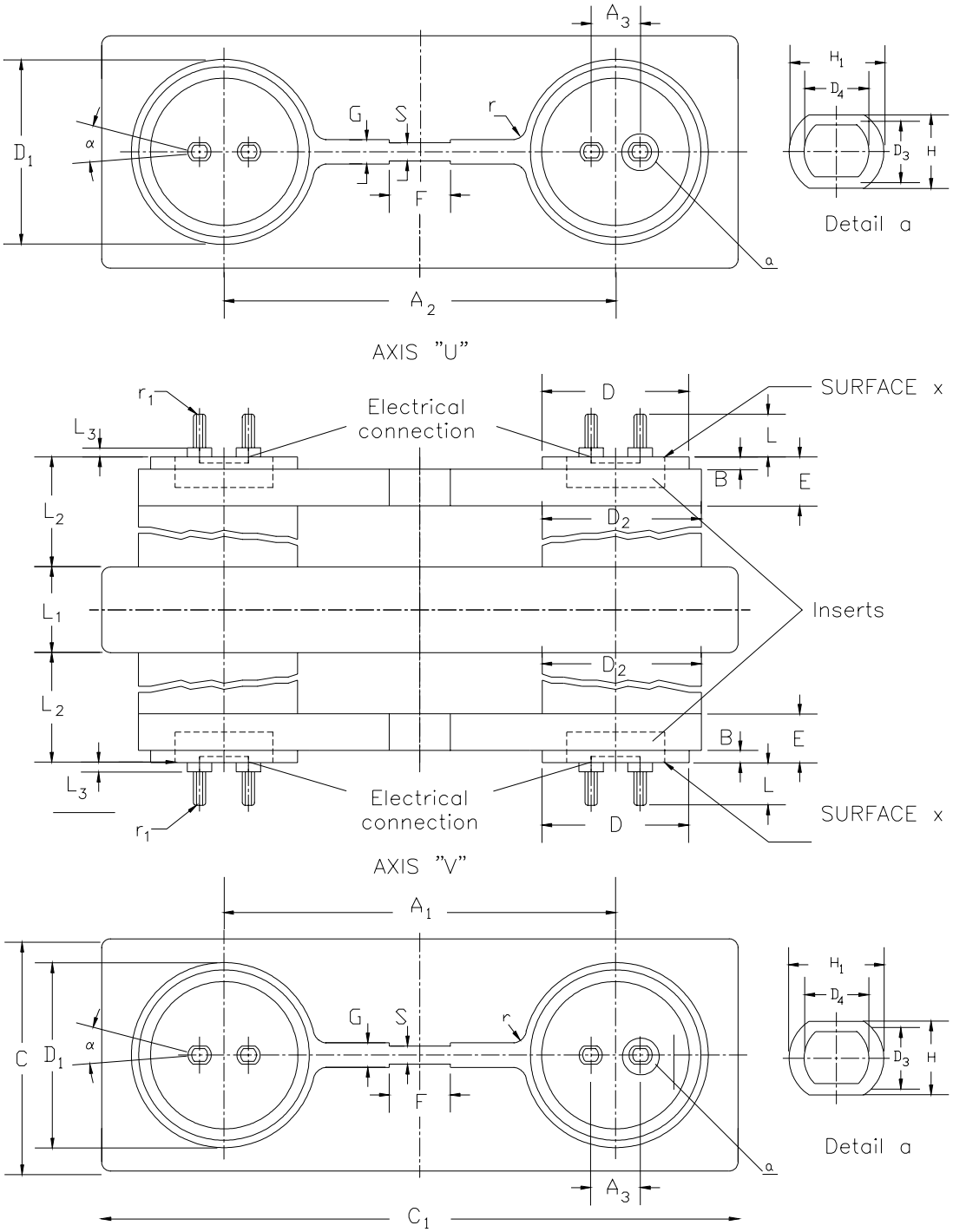
Testing
Without using undue force, attempt to insert the pins of the base into the slots in such a way that the side of at least one pin of each pair is in contact with surface z. Inspect for contact between the underside of at least one of the G13 sections *with surface x of the gauge.*

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"Go" Gauges for Testing Insertion and Contact Making for 2G13 Lampholders

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A_1 (2G13-41)	1.70	+0.0008	43.2
(2G13-92)	3.70	+0.0008	94.0
(2G13-152)	6.08	+0.0008	154.4
A_2 (2G13-41)	1.54	-0.0008	39.1
(2G13-92)	3.54	-0.0008	90.0
(2G13-152)	5.92	-0.0008	150.4
A_3	0.50	±0.0004	12.7
B	0.098	-0.0008	2.5
C (2G13-41)	1.378	approx.	35
C (2G13-92, 152)	2.0	approx.	50
C_1 (2G13-41)	3.150	approx.	80
C_1 (2G13-92)	6.0	approx.	150
C_1 (2G13-152)	8.860	approx.	225
D (2G13-41)	1.015	+0.0008	25.78
D (2G13-92, 152)	1.438	+0.0008	36.52
D_1 (2G13-41)	1.063	+0.0008	27.0
D_1 (2G13-92, 152)	1.52	+0.0008	28.5
D_2 (2G13-41)	1.063	+0.0008	27.0
D_2 (2G13-92, 152)	1.55	+0.0008	39.5
D_3	0.105	+0.0004	2.67
D_4 (Note 1)	0.105	+0.0004	2.79
E (2G13-41)	0.453	+0.0004	11.5
E (2G13-92, 152)	0.51	+0.0004	13.0
F (Note 2)	1.142	-0.0004	29.0
G	0.51	-0.0004	13.0
H	0.13	+0.0004	3.3
H_1	0.142	+0.0004	3.61
L	0.300	+0.0004	3.61
L_1	0.6	approx.	15.0
L_2	2.75	approx.	70.0
L_3	0.030	+0.0004	0.76
S (Note 2)	0.177	+0.0008	4.5
R	0.14	+0.0004	3.5
r_1	0.05	+0.0008	1.2
α	3°	±5°	3°

NOTES
1 Future objective for dimension D_4 is 0.110 inch (2.79mm).
2 The features defined by dimensions F and S are not required for 2G13-41 and 2G13-152 gauges.
3 These gauges are not suitable for checking any lamp retention devices where provided.

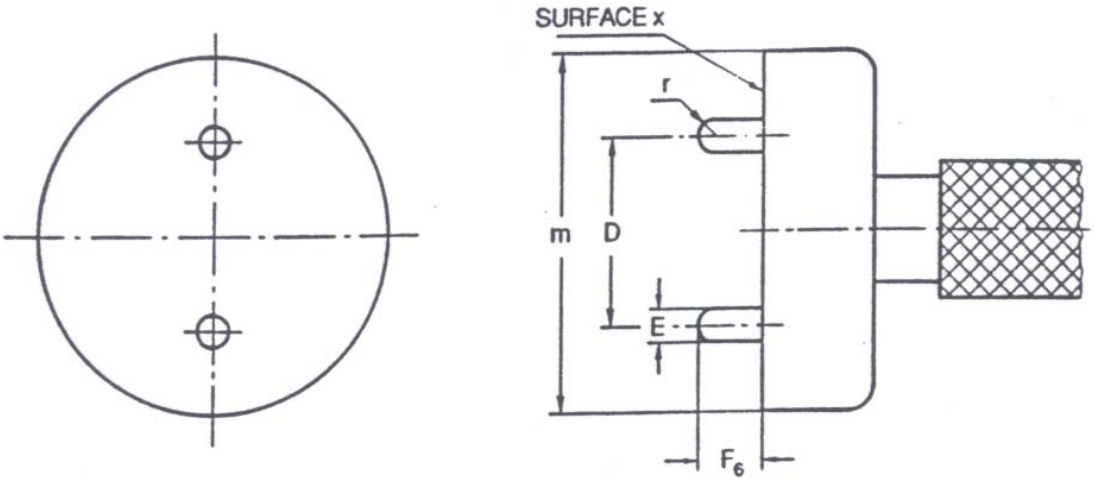
Purpose
To check the insertion and contact-making in lampholders.

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Gauge for Testing Contact-Making for 2G13 Lampholders

This drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.500	±0.0002	12.70
E	0.090	-0.0004	2.29
F_6	0.171	-0.0004	4.35
m	approx 1	-	approx 24
r	approx E/2	-	approx E/2

Purpose
To check contact-making in 2G13 lampholders.

For details of 2G13 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-420.

Testing
Before initiating this test, the standard lampholder shall have satisfied the requirements of gauge 3-423. Insert this gauge in each section of the lampholder in turn, and check to see if gauge surface x is in contact with the holder. Then move the gauge to all possible lateral positions.

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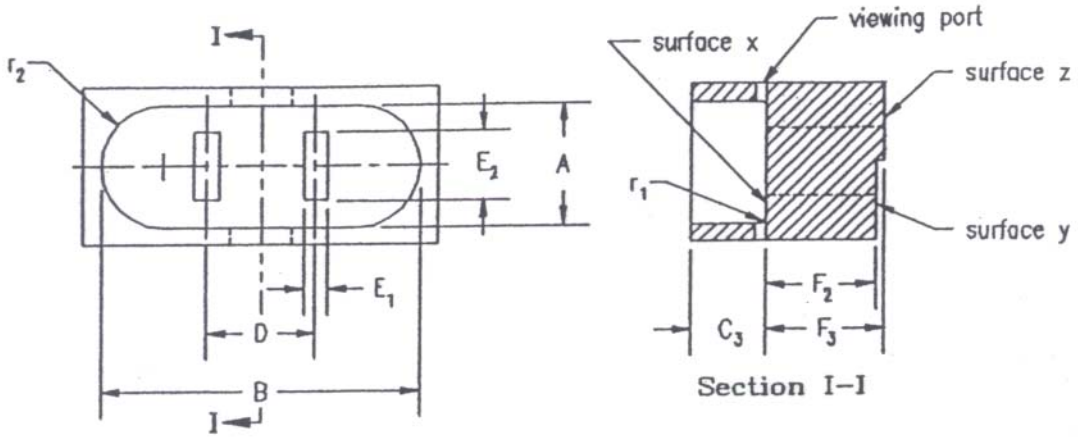
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"Go" Gauge For G16d Mogul and Extended Mogul End Prong Bases

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.769	+0.002	19.53
B	2.094	+0.002	53.19
C_3	0.400	Å0.005	10.16
D	0.656	Å0.0005	16.66
E_1	0.053	+0.0005	1.35
E_2	0.331	+0.001	8.41
F_2	0.430	-0.002	10.92
F_3	0.540	+0.002	13.72
r_1 (Note 1)	0.039	-0.002	1.0
r_2	0.365	-0.005	9.27

NOTE
1 Radius r_1 applies all around the inside cavity, at the bottom.

Purpose
To check lamps with either G16d/12x52 or G16d/32x52 bases for control of insulator block size, prong size, length and displacement.

For details of G16d bases, see ANSI_IEC C81.61, Standard Sheet 1-430.

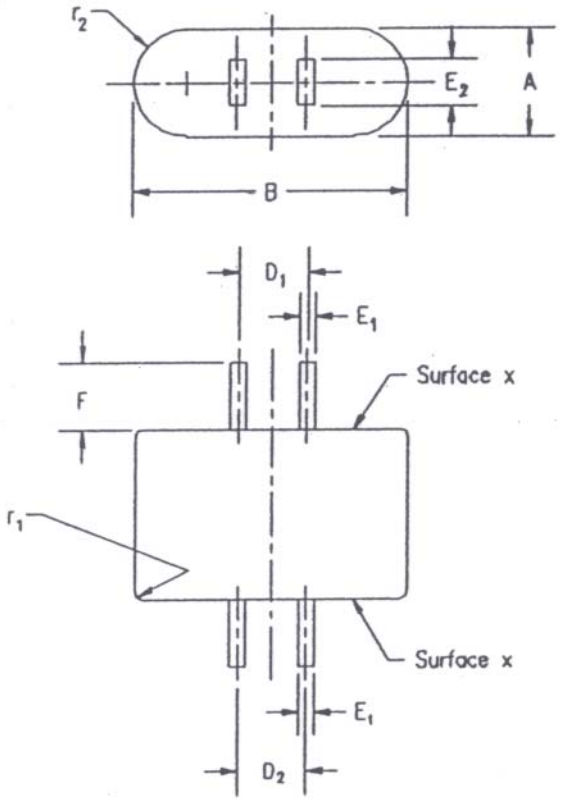
Testing
Without undue force, attempt to insert the base of a lamp into the cavity of this gauge. When the insulator surface x, or the tang area of the base are in contact with surface x of the gauge, check the relationship of the ends of the prongs to gauge surfaces y and z.

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"Go" Gauge For G16d Mogul End-Prong Connectors

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.770	-0.002	19.55
B	2.115	-0.002	53.72
D_1	0.650	Å0.0005	16.51
D_2	0.662	Å0.0005	16.81
E_1	0.054	-0.0005	1.37
E_2	0.333	-0.001	8.46
F	0.544	-0.002	13.82
r_1 (Note 1)	0.036	+0.001	0.91
r_2	0.355	+0.005	9.02

NOTE
1 Radius r_1 applies all around, at the top and bottom.

Purpose
To check G16d connectors with the respect to the fit of a lamp with maximum prong spacings.

For details of G16d connectors, see ANSI_IEC C81.62, Standard Sheet 2-340.

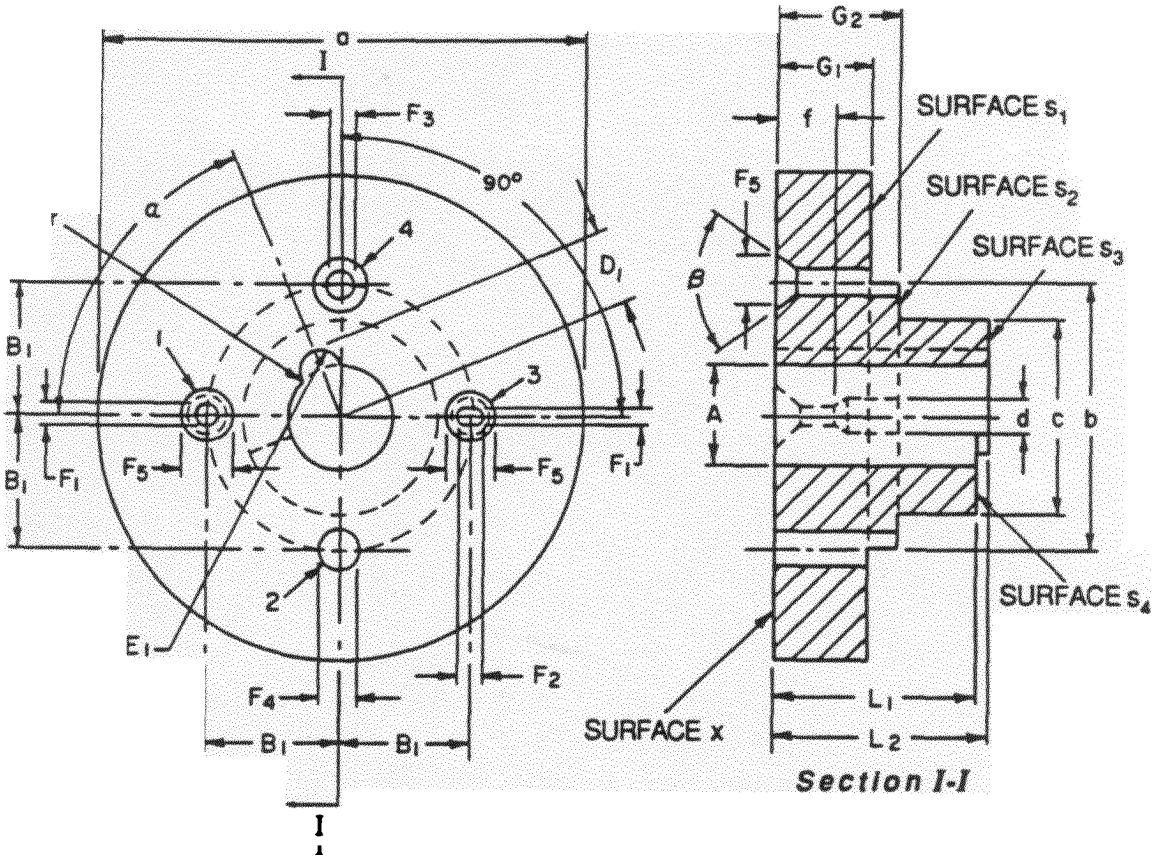
Testing
Attempt to insert each end of this gauge into a connector, and check for fit.

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"Go" Gauge for G17t- and G17q-Based Lamps (Pin Arrangement No. 1)

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.271	-0.0005	6.88
B_1	0.3435	±0.0003	8.72
D_1	0.1825	-0.0005	4.64
E_1	0.047	-0.0005	1.19
F_1	0.052	-0.0005	1.32
F_2	0.070	-0.0005	1.78
F_3	0.061	-0.001	1.55
F_4	0.090	-0.001	2.29
F_5	0.090	-0.001	2.29
G_1	0.235	+0.0005	5.97
G_2	0.295	-0.0005	7.49
L_1	0.525	+0.0005	13.34
L_2	0.545	-0.0005	13.84
a	1.25	±0.02	31.75
b	0.687	±0.005	17.45
c	0.50	±0.02	12.70
d	0.094	±0.01	2.39
f	0.150	±0.001	3.81
r	0.018	-0.002	0.46
α (degrees)	67° 30'	±5’	67° 30'
β (degrees)	80°	±1°	80°

Purpose
To check minimum and maximum post length, post diameter, minimum and maximum pin length, pin diameter, pin spacing, key size and key orientation of G17t- and G17q-based lamps.

For details of G17t and G17q bases, see ANSI_IEC C81.61, Standard Sheets 1-439 and 1-440, respectively.

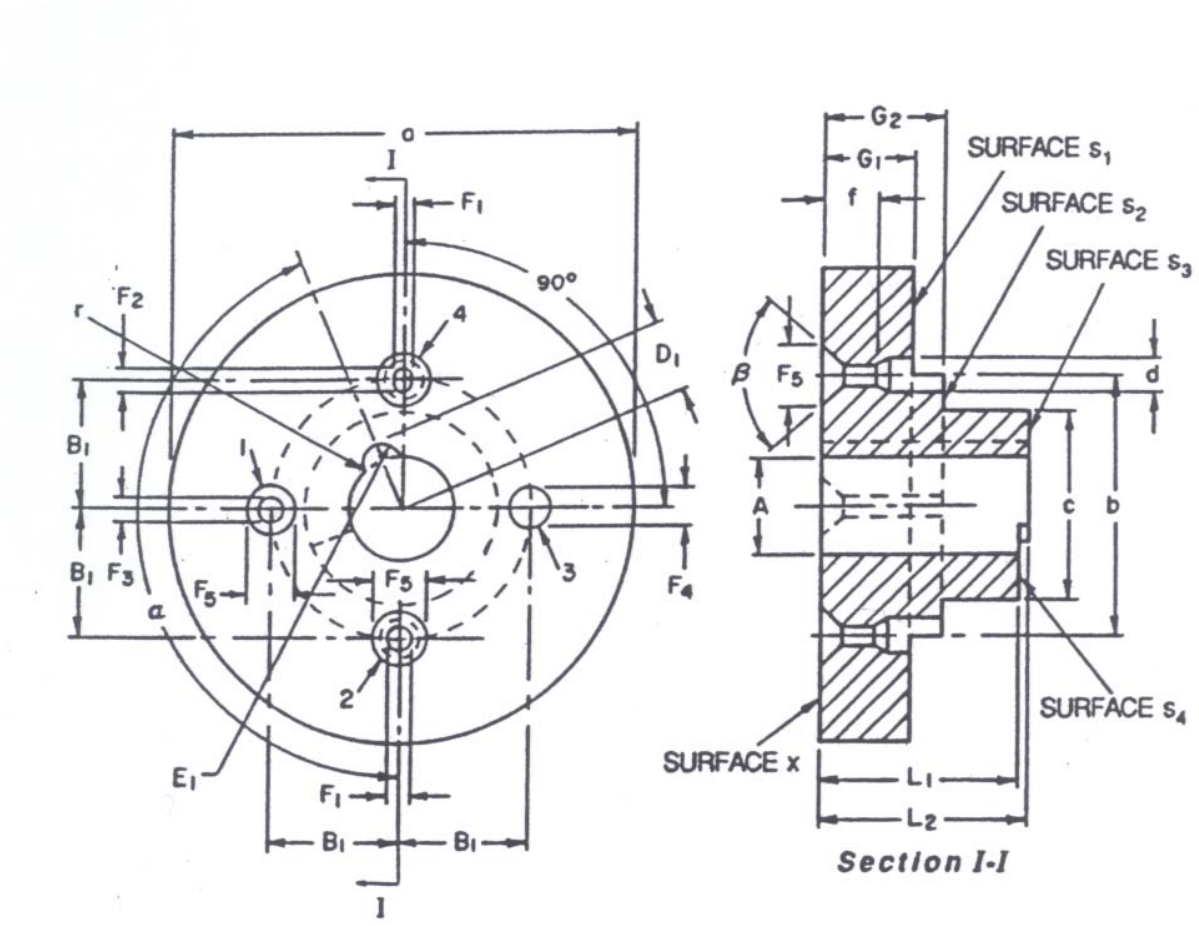
Testing
Insert the base into the gauge and check for contact at surface x. Also, check the positions of the pin-ends relative to surface s_1 and s_2 and the center post relative to surfaces s_3 or s_4.

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"Go" Gauge for GX17q-Based Lamps (Pin Arrangement No. 2)

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.271	-0.0005	6.88
B_1	0.3435	±0.0003	8.72
D_1	0.825	-0.0005	4.64
E_1	0.047	-0.0005	1.19
F_1	0.052	-0.0005	1.32
F_2	0.070	-0.0005	1.78
F_3	0.061	-0.001	1.55
F_4	0.090	-0.001	2.29
F_5	0.090	-0.001	2.29
G_1	0.235	+0.0005	5.97
G_2	0.295	-0.0005	7.49
L_1	0.525	+0.0005	13.34
L_2	0.545	-0.0005	13.84
a	1.25	±0.02	31.75
b	0.687	±0.005	17.45
c	0.50	±0.02	12.70
d	0.094	±0.01	2.39
f	0.150	±0.001	3.81
r	0.018	-0.002	0.46
α degrees)	157° 30°	±5’	157° 30'
β (degrees)	80°	±1°	80°

Purpose
To check minimum and maximum post length, post diameter, minimum and maximum pin length, pin diameter, pin spacing, key size, and key orientation.

For details of GX17q bases, see ANSI_IEC C81-61, Standard Sheet 1-440.

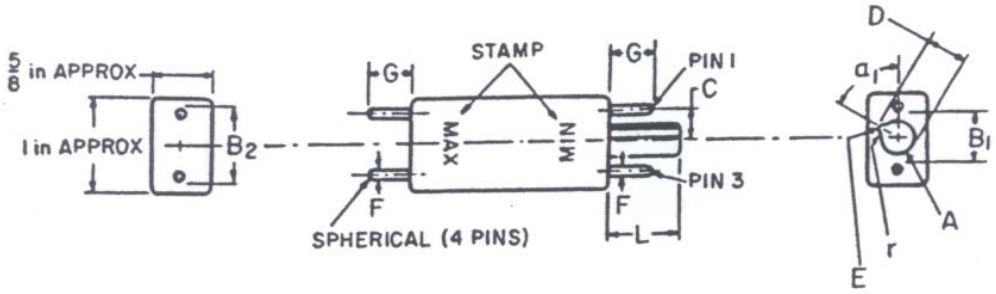
Testing
Insert the base into the gauge and check for contact at surface x. Also, check the positions of the pin-ends relative to surfaces s_1 and s_2 and the center post relative to surfaces s_3 and s_4.

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"Go" Gauge for G17q Lampholders (Pin Arrangement No. 1)

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A (dia)	0.271	+0.0005	6.88
B_1	0.626	-0.001	15.90
B_2	0.748	+0.001	19.00
C	0.3435	±0.0005	8.72
D	0.319	+0.0005	8.10
E (radius)	0.047	+0.0005	1.19
F	0.051	+0.0005	1.30
G	0.295	+0.002	7.49
L	0.545	+0.002	13.84
r (radius)	0.015	+0.002	0.38
α_1 (degrees)	67° 30’	±5’	67° 30’

Purpose
To check post diameter, pin spacing, pin diameter, key size, and key orientation.

For details of G17q lampholders, see ANSI_IEC C81.62, Standard Sheet 2-440.

Testing
Insert each end of the gauge into the lampholder until the surface of the gauge butts against the surface of the holder.

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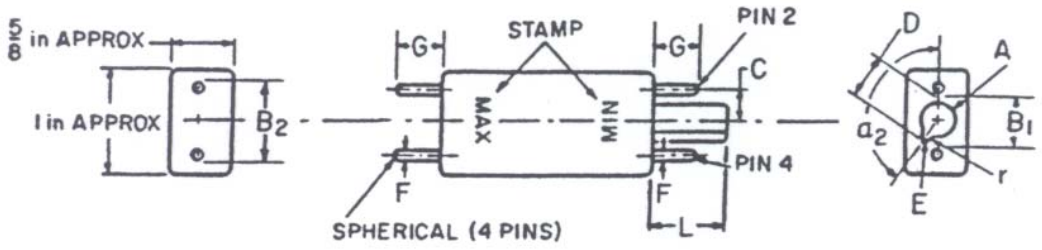
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"Go" Gauge for GX17q Four-Pin Prefocus Lampholders (Pin Arrangement No. 2)

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A (dia)	0.271	+0.0005	6.88
B_1	0.626	-0.001	15.90
B_2	0.748	+0.001	19.00
C	0.3435	±0.0005	8.72
D	0.319	+0.0005	8.10
E (radius)	0.047	+0.0005	1.19
F	0.051	+0.0005	1.30
G	0.295	+0.002	7.49
L	0.545	+0.002	13.84
r (radius)	0.015	+0.002	0.38
α_2 (degrees)	157° 30'	±5'	157° 30'

Purpose
To check post diameter, pin spacing, pin diameter, key size, and key orientation.

For details of GX17q lampholders, see ANSI_IEC C81.62, Standard Sheet 2-440.

Testing
Insert each end of the gauge into the lampholder until the surface of the gauge butts against the surface of the holder.

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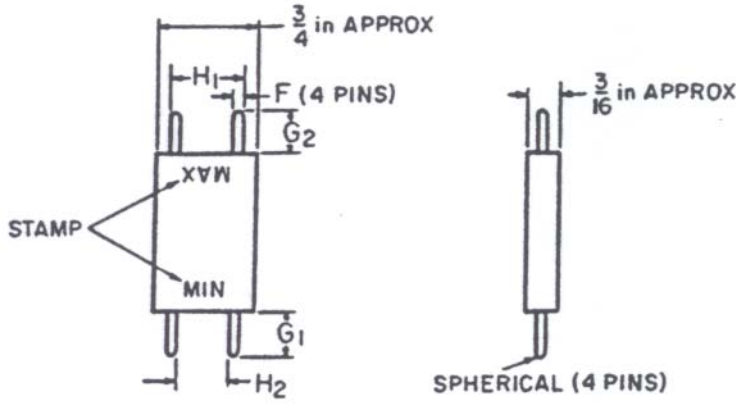
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Two-Pin Contact-Making Gauge for G17q and GX17q Four-Pin Prefocus Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
F	0.049	-0.0002	1.24
G_1	0.235	-0.001	5.97
G_2	0.295	+0.001	7.49
H_1	0.5420	+0.0005	13.77
H_2	0.4296	-0.0005	10.91

Purpose
To check the ability of a lampholder to make electrical contact with the contact-making pins.

For details of G17q and GX17q lampholders, see ANSI_IEC C81.62, Standard Sheet 2-440.

Testing
Insert each end of the gauge into the holes 1 and 4 of G17 lampholder or holes 1 and 2 of GX17 holders, until the gauge is in contact with the holder, and check electrical continuity.

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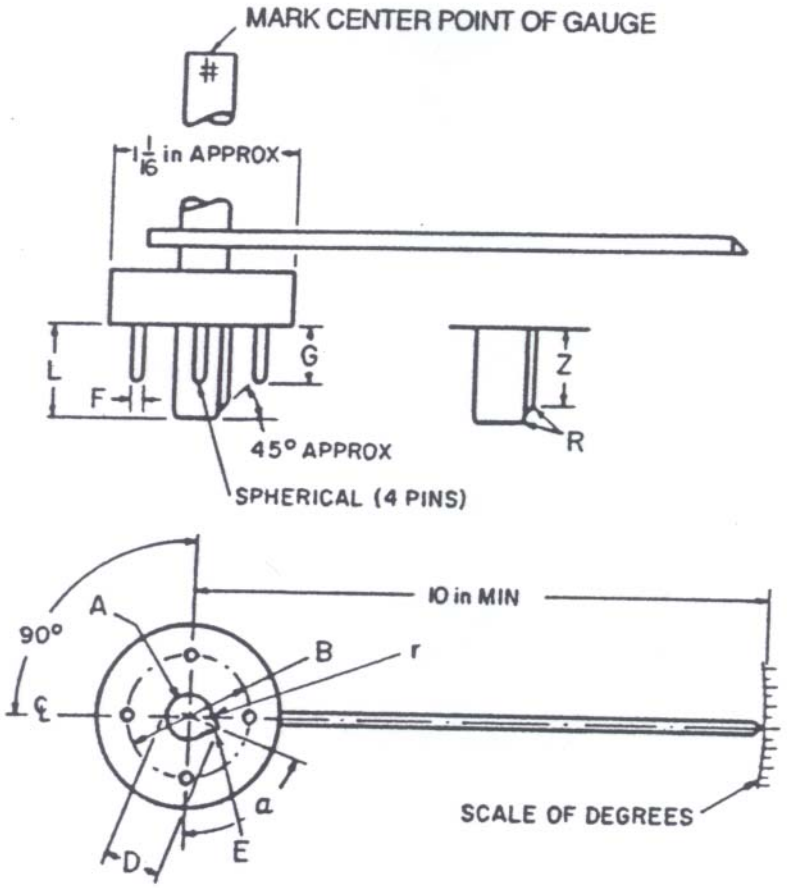
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Rotation Gauge for G17q and GX17q Four-Pin Prefocus Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A (dia)	0.258	-0.0002	6.55
B	0.687	±0.0003	17.45
D	0.301	-0.0002	7.64
E (dia)	0.083	-0.0002	2.11
F	0.049	±0.0001	1.24
G	0.265	±0.005	6.73
L	0.535	±0.005	13.59
R	0.015	approx	0.38
Z	0.395	±0.005	10.03
r (radius)	0.015	+0.002	0.38
α (degrees)	67° 30’	±5’	67° 30’

Purpose
To check lampholders for the angular relationship between the mounting holes and the axis of the holes for the base alignment pins, and for the extent of lamp rotation within the lampholder.

For details of G17q and GX17q lampholders, see ANSI_IEC C81.62, Standard Sheet 2-440.

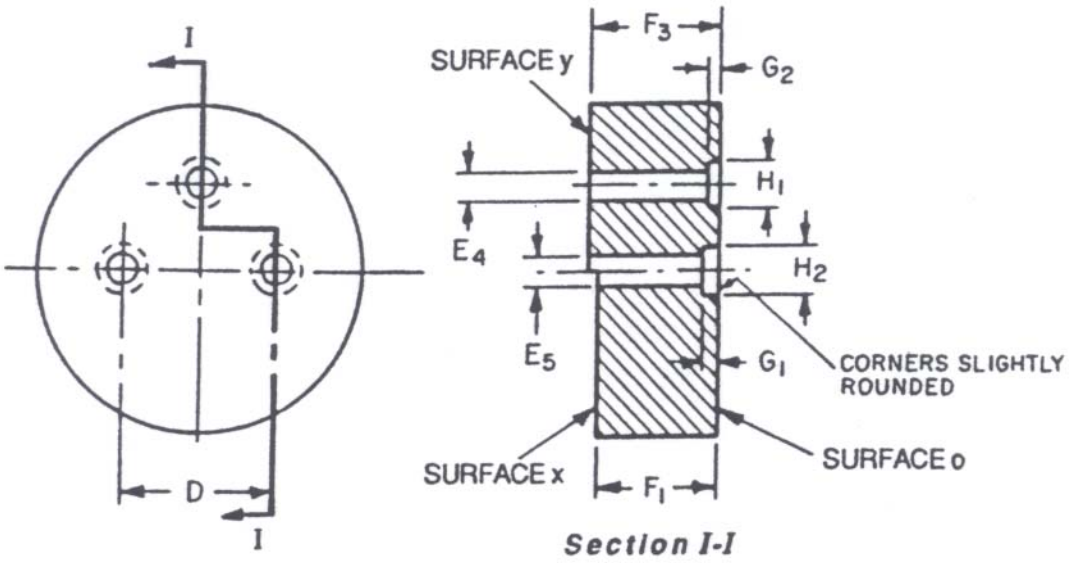
Testing
With the holder held down on the two appropriate alignment pins, insert the gauge in the lampholder until the surface of the gauge butts against the lampholder. Rotate the gauge to its limits and read the angle on the scale of degrees.

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"Go" Gauge for G20 Mogul Bipin Bases on Finished Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D	0.781	±0.0002	19.88
E_4	0.139	+0.0004	3.53
E_5	0.147	+0.0004	3.73
F_1	0.615	-0.001	15.62
F_3	0.660	+0.001	16.76
G_1	0.075	approx	1.90
G_2	0.065	+0.0005	1.65
H_1	0.190	+0.0005	4.83
H_2	0.220	approx	5.49

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Purpose
To check maximum pin diameter, minimum and maximum pin length, and the combined pin diameter and spacing of pins (including bosses).

For details of G20 bases, see ANSI_IEC C81.61, Standard Sheet 1-452.

Testing
Insert the lamp's base pins into gauge holes E_5 at surface o and check for contact of base face to gauge. Also, check the position of the pin-ends relative to surfaces x and y. Insert each individual pin into hole E_4 at surface o and check for base face to gauge contact.

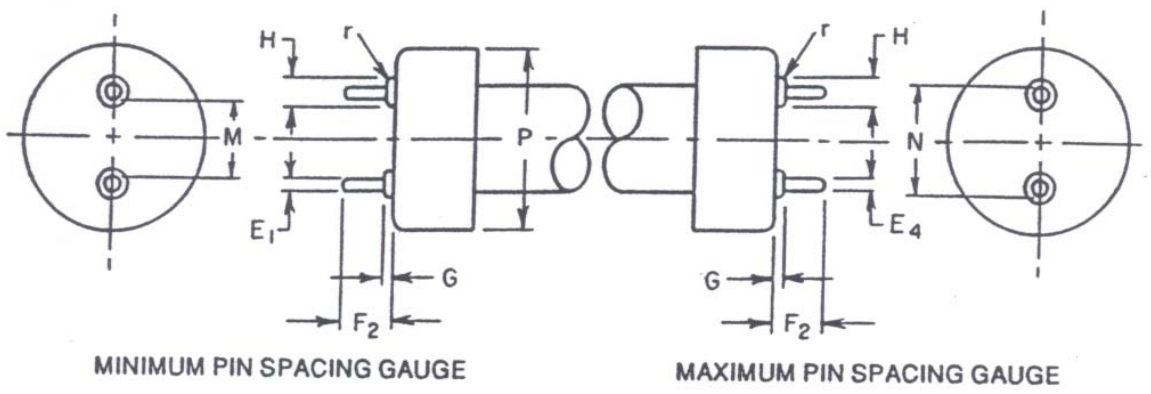
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"Go" Gauges for G20 Mogul Bipin Lampholders

Two separate double-ended gauges are required; a minimum pin-spacing gauge and a maximum pin-spacing gauge.

The drawing is intended only to illustrate the essential dimensions of the gauges.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
E_1	0.120	-0.0004	3.05
E_4	0.139	+0.0004	3.53
F_2	0.625	-0.001	15.87
G	0.065	-0.0004	1.65
H	0.190	-0.0004	4.83
M	0.634	+0.0005	16.10
N	0.928	-0.0005	23.57
P	2.0	approx	51.0
r	0.030	+0.005	0.76

NOTES
1 Pin ends are hemispherical in shape.
2 Pins should be of hardened steel.

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Purpose
To check that lampholders will accept and permit removal of lamps having either minimum spacing between the pins or maximum spacing across the pins.

For details of G20 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-452.

Testing
Insert the minimum and maximum gauges into the lampholder and check for the contact of the gauge face with the holder face.

Check lampholders for good engagement with the pins of the minimum-spacing gauge after having been tested with the gauge having pins set at maximum spacing.

Lampholders that require rotation of the lamp during insertion shall be tested using the following procedure for each of the two “Go" gauges. One of the gauges shall be inserted by first rotating the gauge in a clockwise direction to seat it in the lampholder and then rotating it in a counterclockwise direction to remove it from the holder. The gauge shall then be inserted with a counterclockwise rotation and removed with a clockwise rotation. The procedure shall then be repeated using the other gauge.

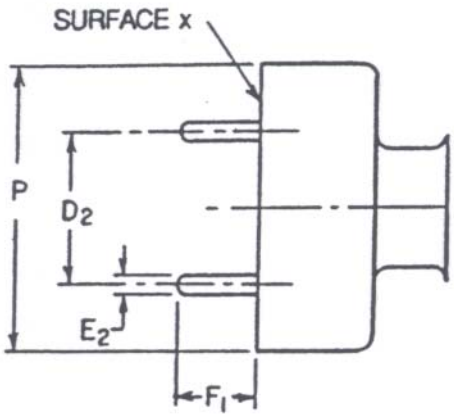
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Torsion Test Device for G20 Mogul Bipin Lampholders

In making the torsion test of an inflexible (rigidly fixed) lampholder as called for in ANSI_IEC C81.62, Standard Sheet 2-452, the torque is applied by means of a simulated lamp base of the following dimensions.

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D_2	0.770	±0.0003	19.56
E_2	0.130	-0.0004	3.30
F_1	0.615	+0.010	15.62
P	2.00	approx	51.0

NOTES
1 Pin ends are hemispherical in shape.
2 Pins should be of hardened steel.

Purpose
To provide a standard means of applying a torsion test to the lampholder contacts.

Testing
The simulated lamp base should be inserted in the lampholder until surface x is in contact with the holder face. The torque may be applied to either the test device (simulated lamp base and torsion test device) or to the lampholder, the other being rigidly mounted.

For details of G20 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-452.

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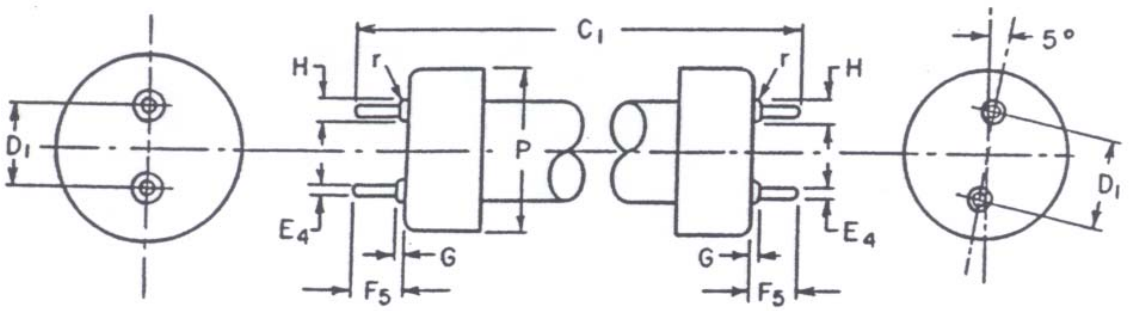
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Double-Ended Gauge, Maximum Length Lamp and Minimum Lampholder Spacing, for G20 Mogul Bipin Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C_1 (Note 1)	11.56	-0.004	293.6
D_1	0.781	±0.0003	19.84
E_4	0.139	-0.0004	3.53
F_5	0.630	±0.0005	16.00
G	0.065	-0.0004	1.65
H	0.190	-0.0004	4.83
P	2.00	approx	51.0
r	0.030	+0.005	0.76

NOTES
1 For convenience in the use of the gauge, this length represents a lamp having a nominal length of 12 in (304.8mm).
2 Pin ends are hemispherical in shape.
3 Pins should be of hardened steel.

The two ends of the gauge are so aligned that the plane containing the axes of the pins at one end forms an angle of 50 ± 0.25° with the plane containing the axes of the pins at the other end.

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Purpose
To check a combined pair of lampholders to ascertain that, at their minimum permissible spacing (as recommended by the manufacturer), they will accept a lamp of maximum length and with maximum rotational misalignment between the planes of the base pins at the two ends of the lamp

For details of G20 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-452.

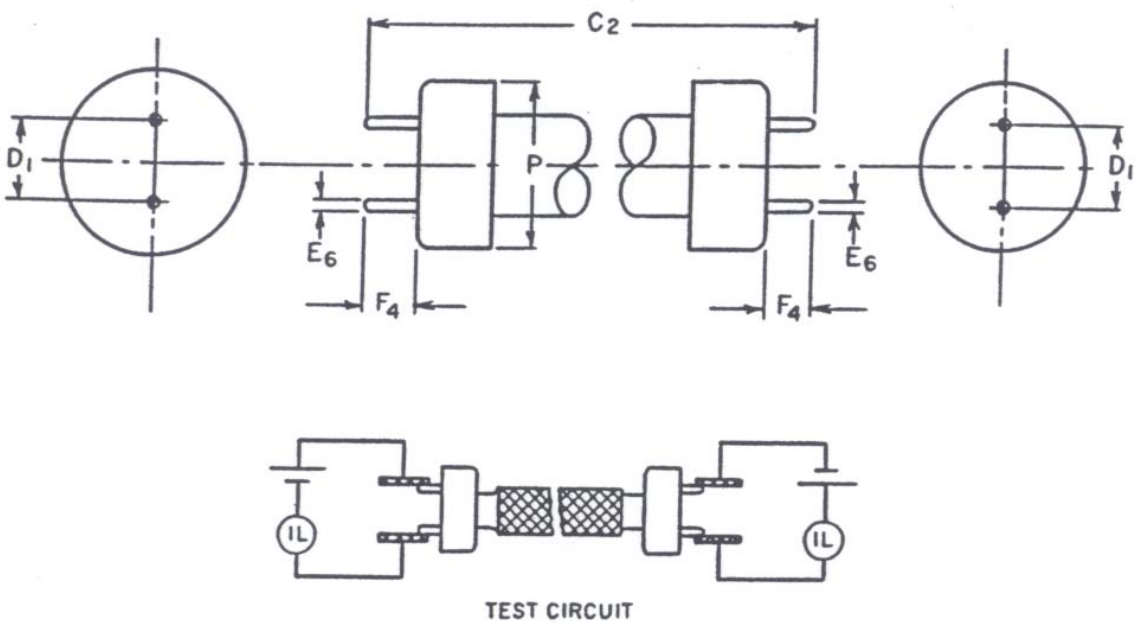
Testing
Insert and remove the gauge, observing any difficulties with such action.

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Double-Ended Gauge, Minimum Length Lamp and Maximum Lampholder Spacing, for G20 Mogul Bipin Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
C_2 (Note 1)	11.33	+0.004	287.8
D_1	0.781	±0.0003	19.84
E_6	0.102	+0.0004	2.59
F_4	0.610	±0.0005	15.49
P	2.00	approx	51.0

NOTES
1 For convenience in the use of the gauge, this length represents a lamp having a nominal length of 12 in (304.8mm).
2 Pin ends are hemispherical in shape.
3 Pins should be of hardened steel.

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Purpose
To check a combined pair of lampholders to ascertain that, at their maximum permissible spacing (as recommended by the manufacturer), they will make contact with all four pins of a minimum-length lamp.

For details of G20 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-452.

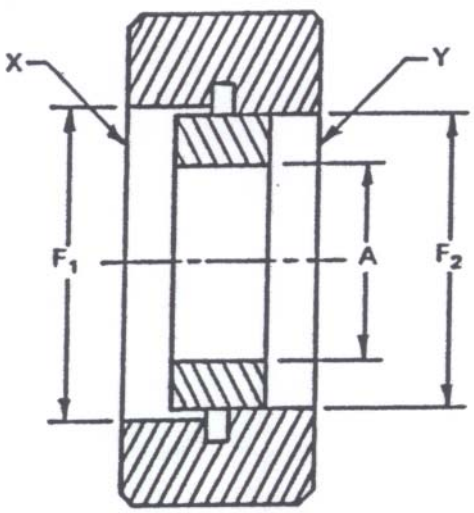
Testing
Insert the gauge into the combined pair of holders and check the indicator light. Move the gauge axially while continuing to observe the indicator light.

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"Go" and "Not-Go" Gauge for Diameter of Collar on P30 Prefocus Bases on Finished Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.6300	+0.0005	16.0
F_1	1.186	+0.001	30.12
F_2	1.180	-.001	29.98

Purpose
To check minimum and maximum collar diameter.

For details of P30 bases, see ANSI_IEC C81.61, Standard Sheet 1-709.

Testing
Insert the base of the lamp at openings X and Y in turn and check for “Go" and “Not-Go" at openings F_1 and F_2, respectively.

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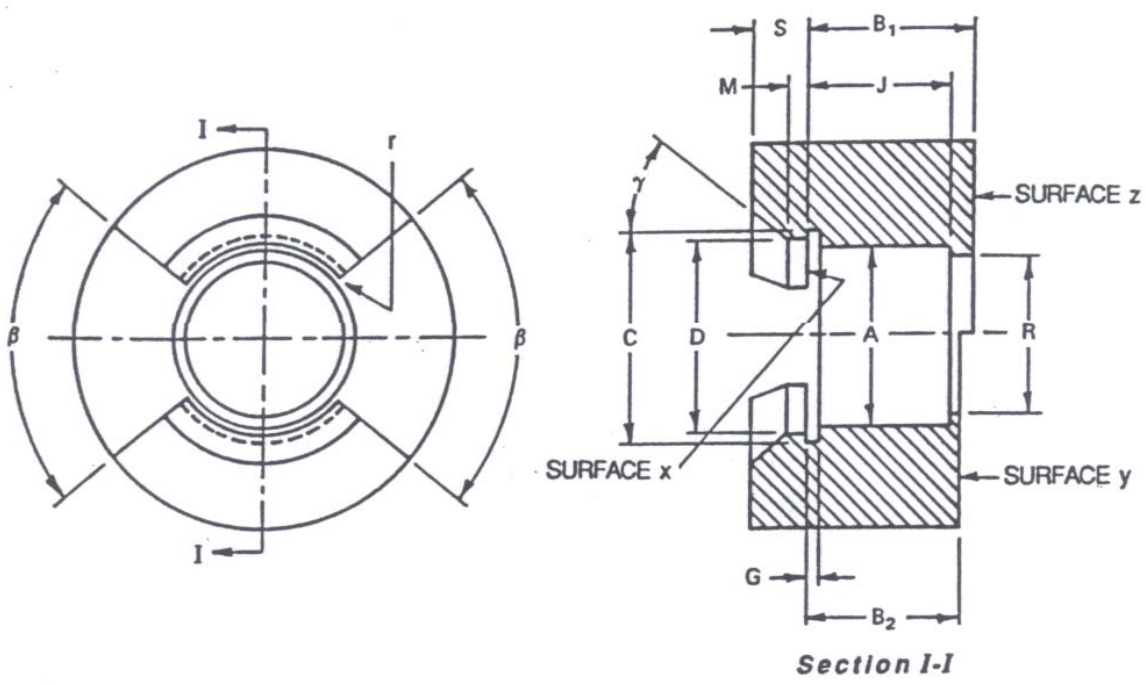
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"Go" Gauge for P40 Mogul Prefocus Based Lamps and for Unmounted Bases Page

The drawing is intended only to illustrate the essential dimensions of the gauge.



Section I-I

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	1.559	+0.001	39.60
B_1	1.701	+0.001	43.21
B_2	1.610	-0.001	40.90
C	2.012	+0.001	51.10
D	1.635	+0.001	41.53
G	0.076	+0.001	1.93
J	1.398	+0.005	35.51
M	0.118	-0.002	3.00
R	1.350	+0.005	34.29
S	0.315	±0.005	8.00
R	0.012	±0.002	0.30
β (degrees)	71°	+15’	71°
γ (degrees)	45°	±30’	45°

Purpose
To check dimensions A max, B_1 max, B_1 min, C max, D max, G max, J max, and angles β and γ of P40 bases on finished lamps and on unmounted bases.

For details of P40 bases, see ANSI_IEC C81.61, Standard Sheet 1-715.

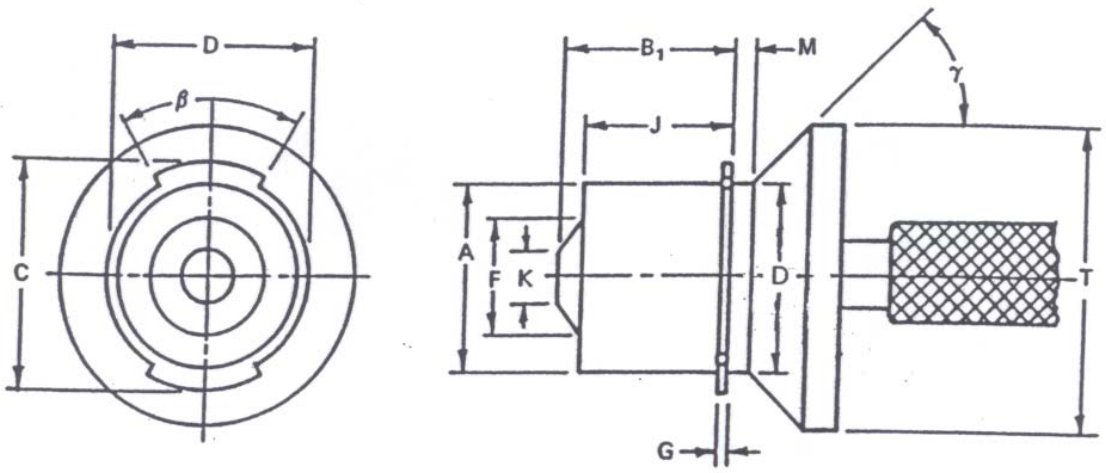
Testing
Push the base of the lamp through recesses β. Turn the gauge approximately 90 degrees with the flanges pressed against surface x. Check center contact of the base in relation to surfaces y and z.

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"Go" Gauge for P40 Mogul Prefocus Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	1.562	±0.0005	39.68
B_1	1.750	-0.001	44.45
C	2.056	-0.001	52.22
D	1.637	-0.001	41.58
F	1.130	+0.001	28.70
G	0.078	-0.001	1.98
J	1.400	+0.001	35.56
K	0.906	+0.001	23.02
M	0.115	+0.001	2.92
T	2.258	-0.001	57.35
β (degrees)	72°	-15’	72°
γ (degrees)	45°	±35	45°

Purpose
To check lampholders with regard to the fit of a lamp with a maximum base.

For details of P40 lampholders, see ANSI_IEC C81.62, Standard Sheet 2-715.

Testing
Insert the gauge into the lampholder and turn it until it reaches the normal operating position of a lamp.

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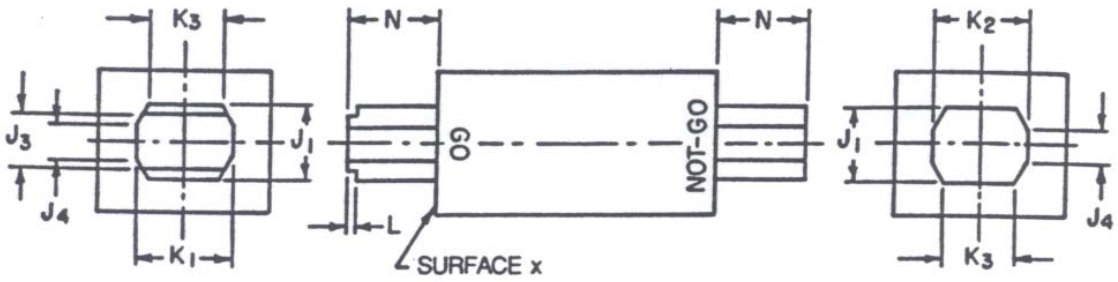
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"Go" and "Not-Go" Gauge for R17d Recessed Double-Contact Bases on Finished Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
J_1	0.201	-0.0005	5.11
J_3	0.170	-0.001	4.32
J_4	0.130	-0.001	3.30
K_1	0.272	-0.0005	6.91
K_2	0.285	+0.0005	7.24
K_3	0.210	-0.001	5.33
L	0.015	+0.001	0.38
N	0.250	-0.001	6.35

Purpose
To check dimensions J min, K min, K max, and N min.

For details of R17d bases, see ANSI_IEC C81.61, Standard Sheet 1-777.

Testing
Insert both ends of the gauge into the recess of each base on a finished lamp. Check for "Go" and "Not-Go" without binding, to a point such that surface x rests on the outer edge of the boss.

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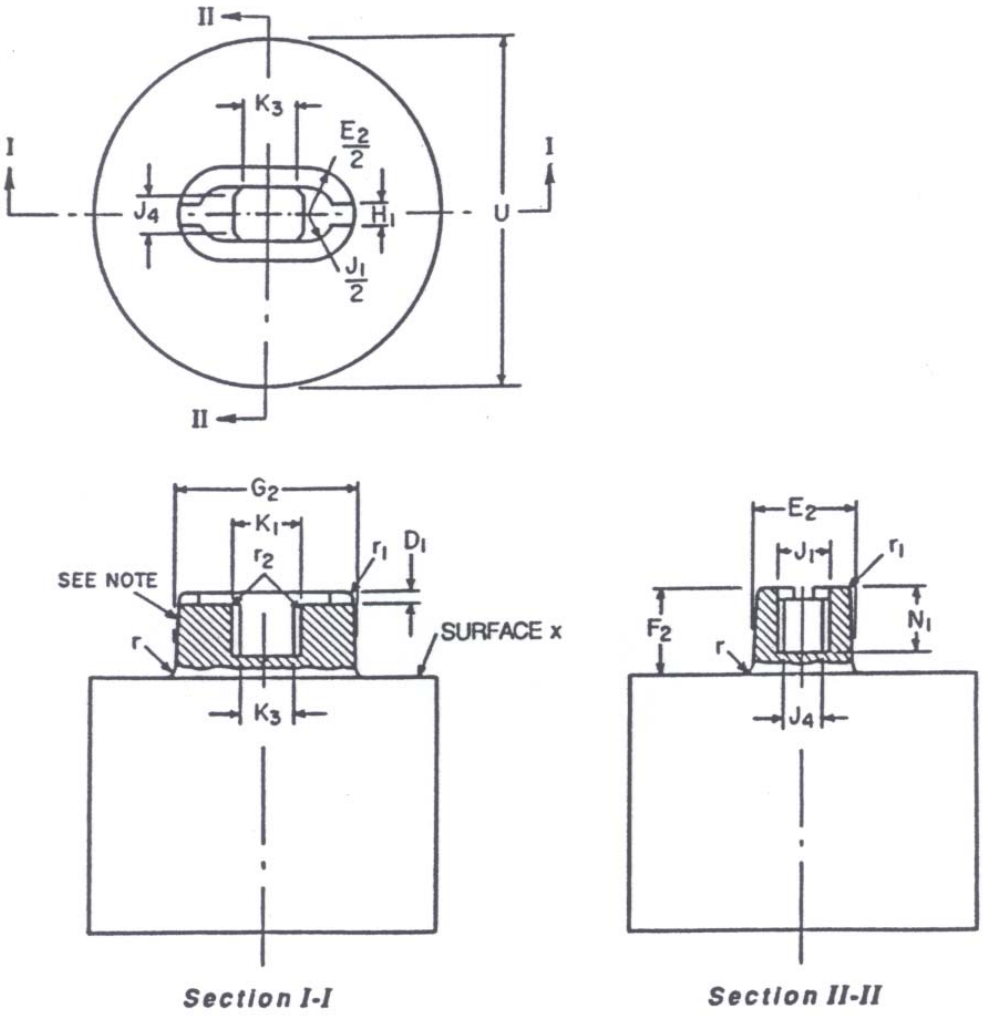
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"Go" Gauge for R17d Recessed Double-Contact Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



NOTE - The outside surfaces of the gauge shall have a taper of approximately 30 minutes.

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D_1	0.036	+0.001	0.91
E_1 (Note 1)	0.351	-0.0005	8.92
F_2	0.320	-0.0005	8.13
G_2 (Note 1)	0.659	-0.0005	16.74
H_1	0.088	-0.002	2.24
J_1	0.200	+0.0005	5.08
J_4	0.128	±0.001	3.25
K_1	0.271	+0.0005	6.88
K_3	0.208	+0.001	5.28
N_1	0.250	+0.002	6.35
U (Note 2)	1.45 (T-12)	±0.05	36.83 (T-12)
-	2.05 (PG-17)	±0.05	52.07 (PG-17)
-	2.05 (TH-17)	±0.05	52.07 (TH-17)
r	0.047	-0.005	1.19
r_1	0.031	+0.005	0.79
r_2	0.020	-0.005	0.51

NOTES
1 Dimensions E_2 and G_2 are measured at a point 0.050 in (1.27 mm) from surface x.
2 This dimension is shown separately for T-12, PG-17, and TH-17 bulb lamps.

Purpose
To check that a lampholder can accept a base of maximum external and minimum internal dimensions.

For details of R17d lampholder, see ANSI_IEC C81.62, Standard Sheet 2-777.

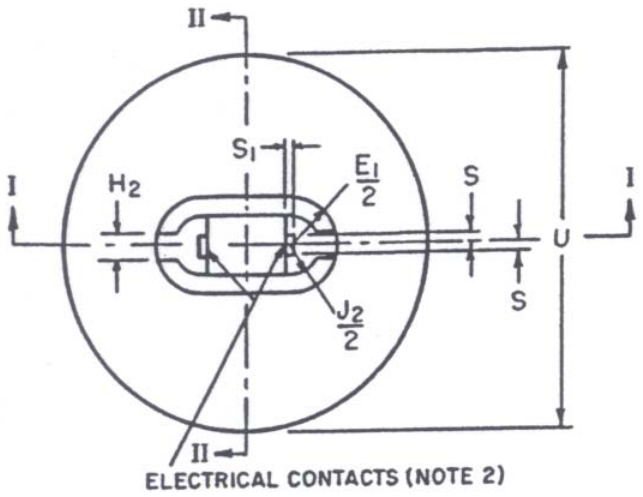
Testing
Insert the gauge into a lampholder and check that surface x meets the lampholder base.

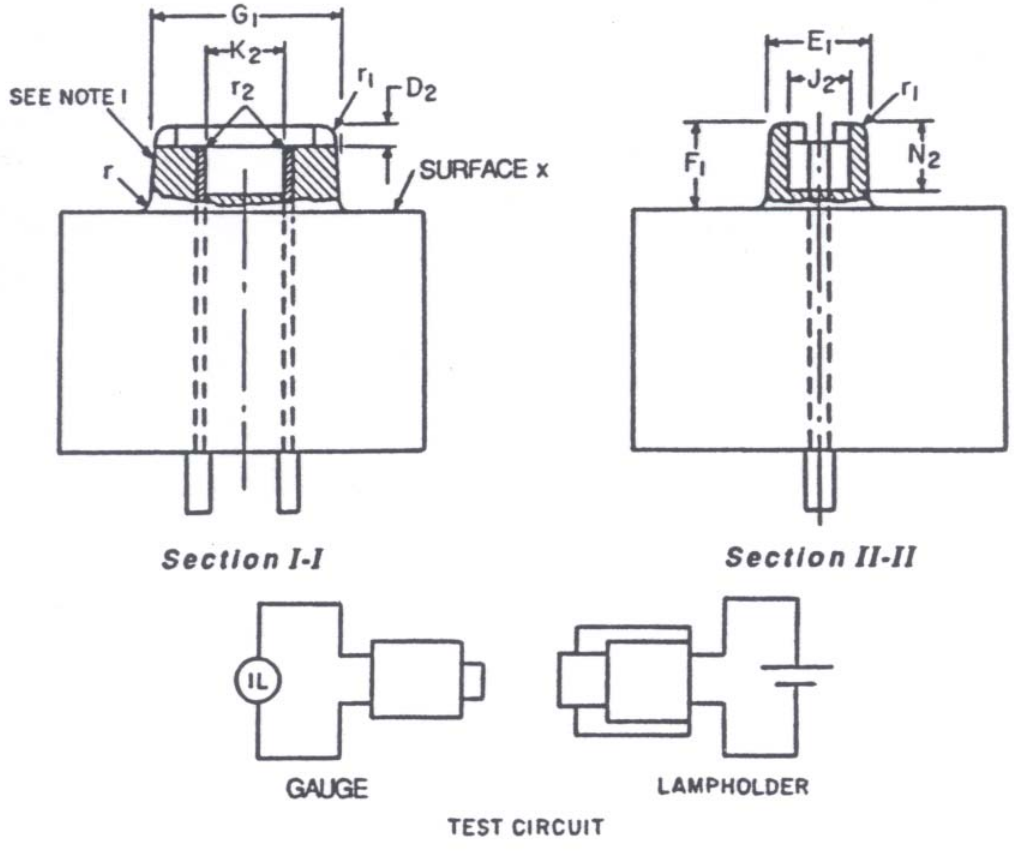
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Contact-Making Gauge for R17d Recessed Double-Contact Lampholders

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
D_2	0.075	-0.001	1.90
E_1 (Note 3)	0.334	+0.0005	8.48
F_1	0.307	+0.0005	7.80
G_1 (Note 3)	0.369	+0.0005	16.23
H_2	0.088	±0.001	2.24
J_2	0.211	-0.0005	5.36
K_2	0.286	-0.0005	7.26
N_2	0.250	-0.002	6.35
S	0.040	±0.0005	1.02
S_1	0.020	±0.001	0.51
U (Note 4)	1.45 (T-12)	±0.05	36.83 (T-12)
-	2.05 (PG-17)	±0.05	52.07 (PG-17)
-	2.05 (TH-17)	±0.05	52.07 (TH-17)
r	0.047	+0.005	1.19
r_1	0.031	-0.005	0.79
r_2	0.050	-0.005	1.27

NOTES
1 The outside surface of the gauge shall have a taper of approximately 30 minutes.
2 The electrical contacts are insulated from the metal body of the gauge.
3 Dimensions E_1 and G_1 are measured at a point 0.050 in (1.27 mm) from surface x.
4 This dimension is shown separately for T-12, PG-17, and TH-17 bulb lamps.

Purpose
To check that a lampholder can make and maintain electrical contact with a base having minimum external and maximum internal dimensions.

For details of R17d lampholder, see ANSI_IEC C81.62, Standard Sheet 2-777.

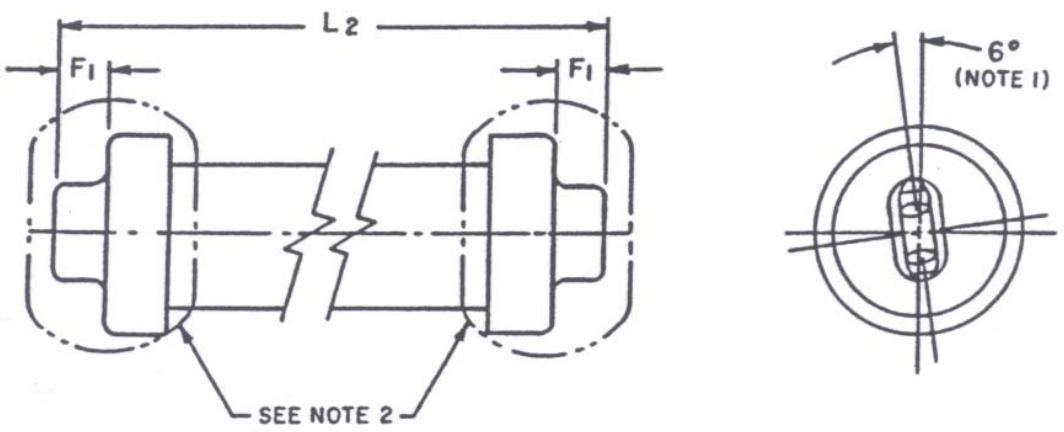
Testing
Insert the gauge into a lampholder and check for illumination of the lamp IL in the test circuit.

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Double-Ended "Go" Gauge, Maximum Length Lamp and Minimum Lampholder Spacing, for R17d Recessed Double Contact Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
L_2 (Note 3)	15.910	±0.004	404.11
F_1	0.307	+0.0005	7.80

NOTES
1 The two ends of the gauge are so aligned that the plane containing the axis of the base at one end forms an angle of 6° ± 0.25° with the planes containing the axis of the base at the other end, as shown.
2 All other dimensions correspond with the “Go” gauge shown on Standard Sheet 3-780 in this standard.
3 For convenience in the use of the gauge, this length represents a lamp having a nominal length of 18 in (457.2 mm).

Purpose

To check a combined pair of lampholders to ascertain that at their minimum permissible spacing (as recommended by the manufacturer), they will accept a lamp of maximum length with maximum rotational misalignment between the planes of the lamp base at the two ends of the lamp.

For details of R17d lampholders, see ANSI_IEC C81.62, Standard Sheet 2-777.

Testing

Insert and remove the gauge from holders without difficulty or holder breakage.

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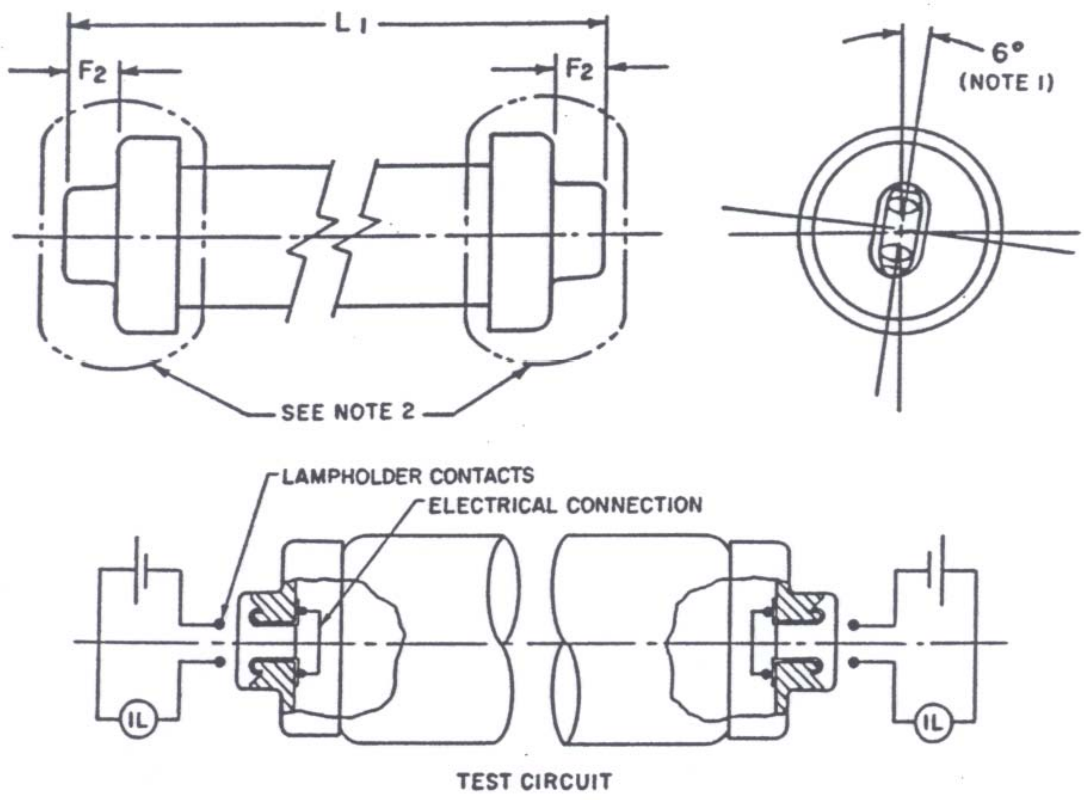
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Double-Ended "Go" Gauge, Minimum-Length Lamp and Maximum Lampholder Spacing, for R17d Recessed Double-Contact Lampholders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equipment (millimeters)
L_1 (Note 3)	15.720	±0.0040	399.29
F_2	0.320	-0.0005	8.13

NOTES
1 The two ends of the gauge are so aligned that the plane containing the axis of the base at one end forms an angle of 6° ± 0.25° with the planes containing the axis of the base at the other end, as shown.
2 All other dimensions correspond with the contact-making gauge shown on Standard Sheet 3-784 in this standard.
3 For convenience in the use of the gauge, this length represents a lamp having a nominal length of 18 in (457.2 mm).

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Purpose
To check a combined pair of R17d lampholders to ascertain that at their maximum permissible spacing (as recommended by the manufacturer), they will make contact with all four contacts of a minimum-length lamp, and that they retain a minimum-length lamp.

For details of R17d lampholders, see ANSI_IEC C81.62, Standard Sheet 2-777.

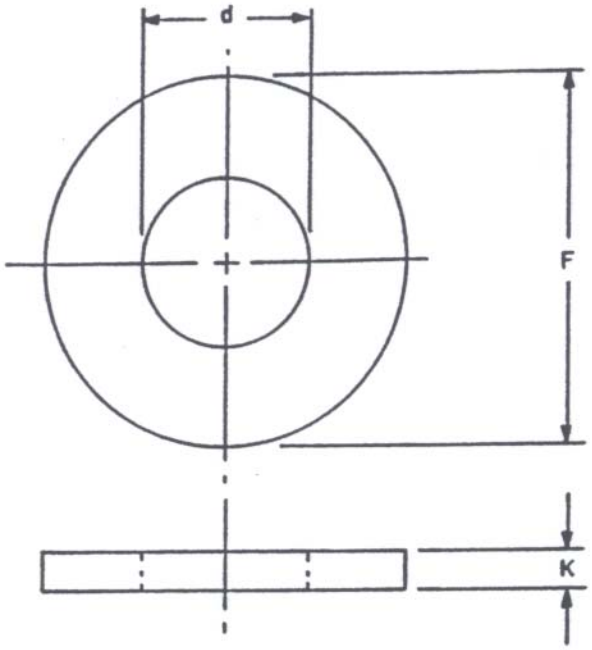
Testing
Insert the gauge into holders to check for illumination of the lamp IL in the test circuit.

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"Go" Ring Gauge for SX4 Submidget-Flanged-Based Lamps

The drawing is intended only to illustrate essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
F	2.4	approx	61
K	0.107	+0.001	2.72
d	0.159	+0.0005	4.04

Mass lb	Tolerance	Nearest Metric Equivalent kg
0.14	±10%	0.0635

Purpose
To check the maximum major diameter of the cylindrical shell on finished lamps.

For details of the SX4 bases, see ANSI_IEC C81.61, Standard Sheet 1-850.

Testing
Place the gauge over the bulb end of a lamp. Check for "free fall" of gauge and base rim height.

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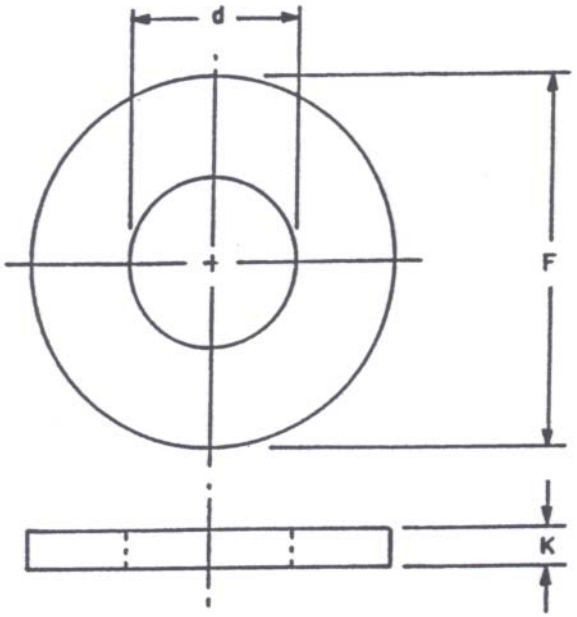
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"Not-Go" Ring Gauge for SX4 Submidget-Flanged-Based Lamps

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
F	2.4	approx	61
K	0.107	±0.001	2.72
d	0.153	-0.0005	3.89

Mass lb	Tolerance	Nearest Metric Equivalent mm
0.14	±10%	0.0635

Purpose
To check the minimum major diameter of the cylindrical shell on finished lamps.

For details of the SX4 bases, see ANSI_IEC C81.61, Standard Sheet 1-850.

Testing
Place gauge over the bulb end of the lamp. Check that the gauge will not “free fall" beyond the base rim.

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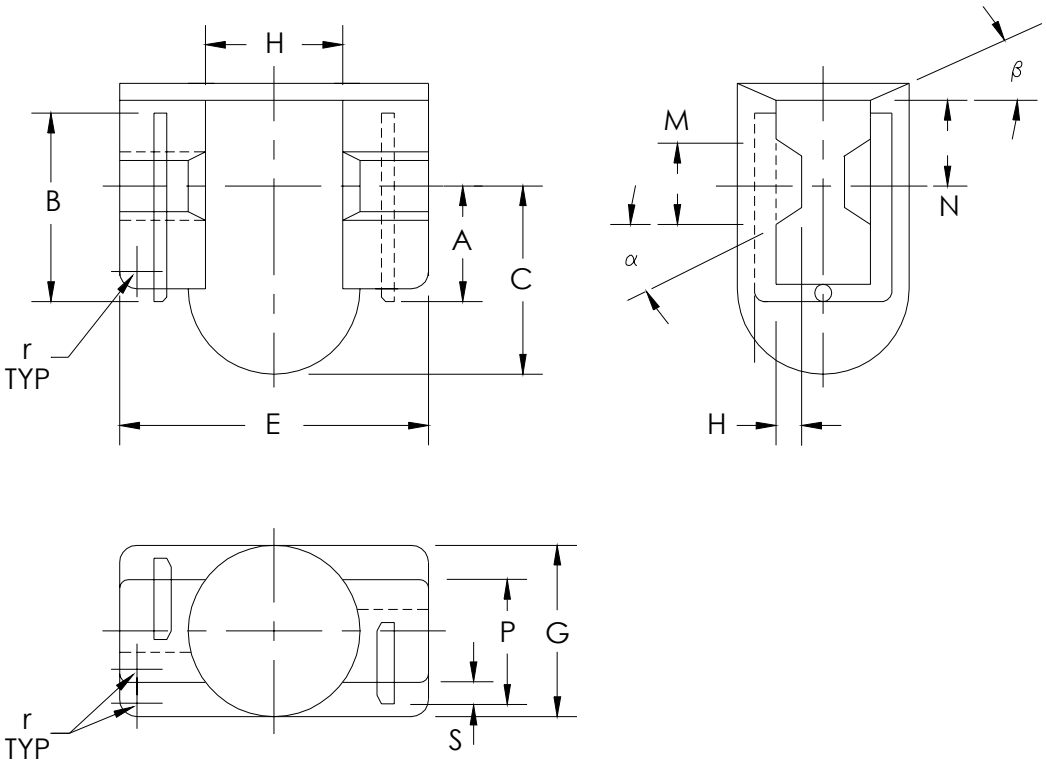
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W2.1x4.9d Minimum and Maximum Retention Gauges

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Reference	Standard Dimensions (millimeters)				Nearest Equivalent (inches)			
	Min Gauge		Max Gauge		Min Gauge		Max Gauge	
A	2.18	-0.01	3.04	+0.01	0.085	-0.0004	0.119	+0.0004
B	3.05	-0.01	5.08	+0.01	0.120	-0.0004	0.200	+0.0004
C	2.18	-0.01	4.88	+0.01	0.085	-0.0004	0.192	+0.0004
E	5.08	-0.01	5.08	+0.01	0.200	-0.0004	0.200	+0.0004
G	2.52	-0.01	3.10	+0.01	0.100	-0.0004	0.122	+0.0004
H	3.30	NOM	3.30	NOM	0.130	NOM	0.130	NOM
M	1.50	+0.03	1.50	+0.03	0.060	+0.0012	0.060	+0.0012
N	1.65	-0.01	1.65	+0.01	0.065	-0.0004	0.065	+0.0004
P	1.78	-0.01	2.28	+0.01	0.070	-0.0004	0.090	+0.0004
Q	0.50	+0.01	0.50	+0.01	0.020	+0.0004	0.020	+0.0004
S	0.30	NOM	0.30	NOM	0.012	NOM	0.012	NOM
r	0.25	NOM	0.25	NOM	0.010	NOM	0.010	NOM
α	15 deg ± 3		15 deg ±3		15 deg ±3		15 deg ±3	
β	30 deg ± 1		30 deg ±1		30 deg ±1		30 deg ±1	

Purpose
To check P8.25d Bases or other types of holders or sockets intended to accept “removable type” W2.1x4.9d Wedge Base Lamps.

Base (reference)
For W2.9x4.1 Wedge Base on finished lamp see ANSI_IEC C81.61 Standard Sheet 1-900. For P8.25d base, see ANSI_IEC C81.61 Standard Sheet 1-530.

Lamp (reference)
See ANSI_IEC C81.61 Standard Sheet 1-900-1.

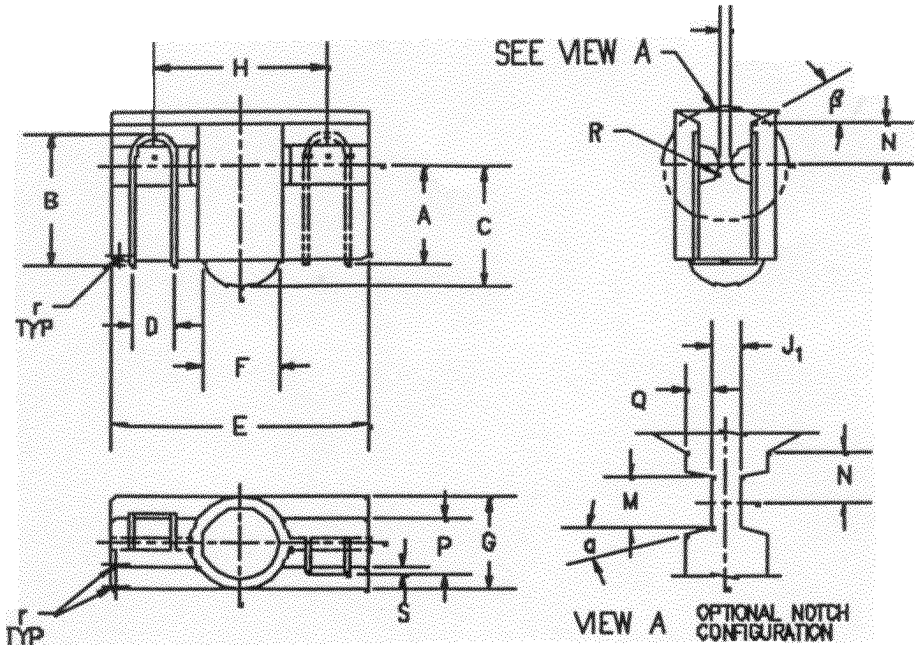
Testing
Insert both the minimum and maximum gauges into the base. The base shall accept both gauges.

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W2.1x9.2d Minimum and Maximum Retention Gauges

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Reference	Standard Dimensions (millimeters)		Nearest Equivalent (inches)	
	Min Gauge	Max Gauge	Min Gauge	Max Gauge
A	3.68 (-0.01)	4.45 (+0.01)	0.145 (-0.0004)	0.175 (+0.0004)
B	5.01 (-0.01)	6.10 (+0.01)	0.197 (-0.0004)	0.240 (+0.0004)
C	3.68 (-0.01)	6.10 (+0.01)	0.145 (-0.0004)	0.240 (+0.0004)
D	1.50 (NOM)	1.50 (NOM)	0.060 (NOM)	0.060 (NOM)
E	9.50 (-0.01)	9.50 (+0.01)	0.374 (-0.0004)	0.375 (+0.0004)
F	3.05 (-0.01)	3.05 (+0.01)	0.120 (-0.0004)	0.120 (+0.0004)
G	3.30 (-0.01)	4.06 (+0.01)	0.130 (-0.0004)	0.160 (+0.0004)
H	5.60 (NOM)	5.60 (NOM)	0.220 (NOM)	0.220 (NOM)
J	0.80 (NOM)	0.80 (NOM)	0.031 (NOM)	0.031 (NOM)
J_1	1.20 (NOM)	1.20 (NOM)	0.047 (NOM)	0.047 (NOM)
M	1.25 (+0.03)	1.25 (+0.03)	0.050 (+0.0012)	0.050 (+0.0002)
N	1.65 (-0.01)	1.65 (+0.01)	0.065 (-0.0004)	0.065 (+0.0004)
P	1.91 (-0.01)	2.41 (+0.01)	0.075 (-0.0004)	0.095 (+0.0004)
Q	0.64 (+0.03)	0.64 (+0.03)	0.025 (+0.0012)	0.025 (+0.0012)
R	0.76 (±0.13)	0.76 (±0.13)	0.030 (±0.005)	0.030 (±0.005)
S	0.30 (NOM)	0.30 (NOM)	0.012 (NOM)	0.012 (NOM)
r	0.25 (NOM)	0.25 (NOM)	0.010 (NOM)	0.010 (NOM)
α	15° (±3)	15° (±3)	15° (±3)	15° (±3)
β	30° (±1)	30° (±1)	30° (±1)	30° (±1)

Purpose
To check P12-4d Bases or other types of holders or sockets intended to accept "removable type" W2.1x9.2d Wedge Base Lamps.

Base (reference)
For P12.9d base, see ANSI_IEC C81.61, SS 1-550.
For W2.1x9.2d for wedge base on finished lamps, see ANSI_IEC C81.61, SS 1-920.

Lamp (reference)
See ANSI_IEC C81.61, SS 1-920.

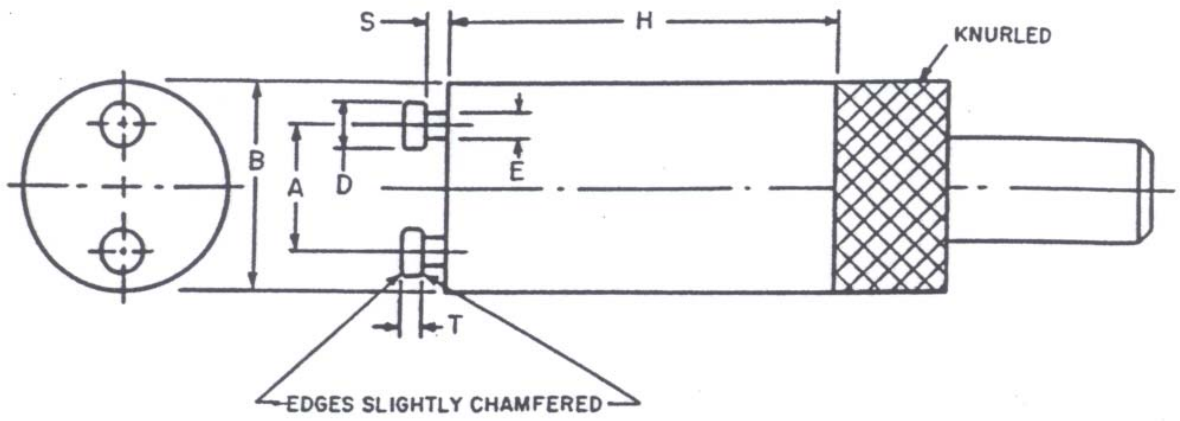
Testing
Insert both the minimum and maximum gauges into the base. The base shall accept both gauges.

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"Go" Gauges for Fluorescent Lamp Starter Holders

The drawing is intended only to illustrate the essential dimensions of the gauge.



Reference	Standard Dimensions (inches)		Tolerance	Nearest Metric Equivalent (millimeters)	
	Gauge "A"	Gauge "B"		Gauge "A"	Gauge "B"
A	0.506	0.494	±0.0002	12.85	12.55
B	0.847	0.847	+0.0004	21.5	21.5
D	0.197	0.197	+0.0004	5.0	5.0
E	0.126	0.126	+0.0004	3.2	3.2
H	1.5	1.5	approx	38.0	38.0
S	0.067	0.067	-0.0004	1.7	1.7
T	0.087	0.087	-0.0004	2.2	2.2

Purpose
To check starter holders with regard to the fit of a maximum starter.

For details of starter holders, see ANSI_IEC C81.62, Standard Sheet 2-900.

Testing
Insert both “A" and “B" gauges into a starter holder and check for smoothness and seating.

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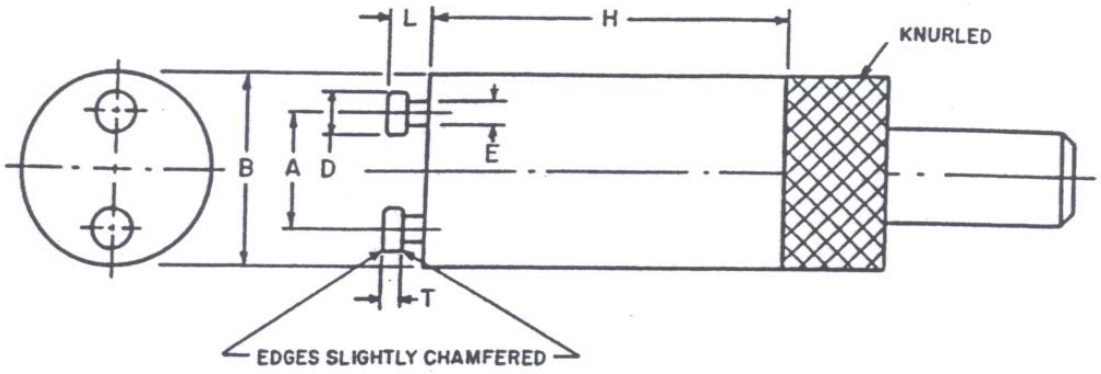
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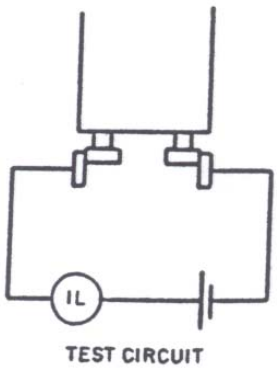
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Contact-Making and Retention Force Gauge for Fluorescent Lamp Starter Holders

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Reference	Standard Dimensions (inches)	Tolerance (inches)	Nearest Metric Equivalent (millimeters)
A	0.500	±0.0002	12.7
B	0.788	+0.004	20.0
D	0.177	-0.0004	4.5
E	0.102	-0.0004	2.6
H	1.5	approx	38.0
L	0.169	+0.0004	4.3
T	0.075	-0.0004	1.9

Purpose
To check the retention and contact-making of a minimum starter in a starter holder; the contact force being determined inter alia by the starter-pin spacing.

For details of starter holders, see ANSI_IEC C81.62, Standard Sheet 2-900.

Testing
Insert into a starter holder. Check for test circuit lamp lighting.

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PART III
United States Deviations to IEC Harmonized Gauge Standard Sheets

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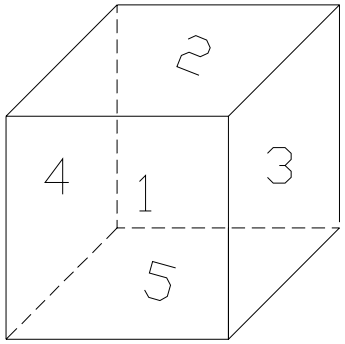
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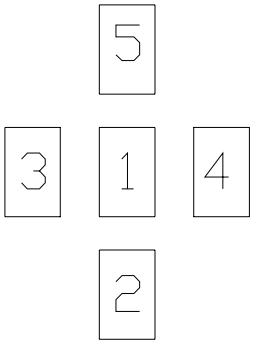
ANNEXES

Annex A
Contrast of Projection Methods on Engineering Drawings
(Informative)

I. European Method: First angle projection

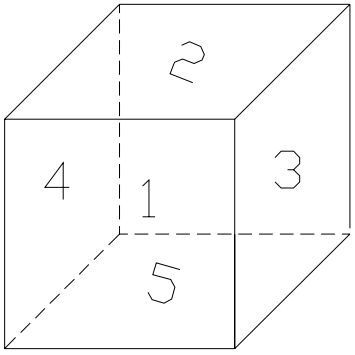


Product

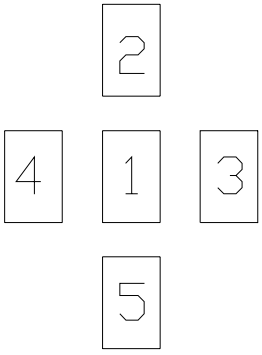


Drawing projections

II. American Method: Third angle projection



Same Product



Drawing projections

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Annex B
Bibliography
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B.1 Related Standards

These standards are listed here for information

ANSI C81.64-1993, *Guidelines and General Information for Electric Lamp Bases, Lampholders and Gauges*

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