U. S. DEPARTMENT OF COMMERCE
JESSE H. JONES, Secretary

NATIONAL BUREAU OF STANDARDS
LYMAN J. BRIGGS, Director

GAGE BLANKS

(Third Edition)

COMMERCIAL STANDARD CS8–41

[Supersedes CS8–33]

Effective Date for New Production January 1, 1941, and Clearance of Existing Stocks January 1, 1942

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OF THE TRADE

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PROMULGATION

of

COMMERCIAL STANDARD CS8–41

for

GAGE BLANKS

(Third Edition)

On March 4, 1930, at the request of the American Gage Design Committee, a pamphlet entitled "Plain and Thread Plug and Ring Gage Blanks, Recommended Commercial Standard" was circulated to producers and users for written acceptance. Following acceptance in writing by the industry, it was published as Commercial Standard CS8–30, Plain and Thread Plug and Ring Gage Blanks.

Acting on the recommendation of the American Gage Design Committee and with the approval of the Standing Committee, a recommended revision, including gages of larger sizes and of other types, was circulated in June, 1933, for written acceptance, approved by the industry for promulgation, and published as Gage Blanks, Commercial Standard CS8–33.

On October 22, 1940, on recommendation of the American Gage Design Committee and with the approval of the Standing Committee, a recommended revision to cover additional types and minor revisions in some existing types was circulated to the industry for written acceptance. Those concerned have since accepted and approved for promulgation by the U. S. Department of Commerce, through the National Bureau of Standards, the revised standard as shown herein.

The standard is effective for new production from January 1, 1941, and for clearance of existing stocks on January 1, 1942.

Promulgation recommended.

I. J. Fairchild,
Chief, Division of Trade Standards.

Promulgated.

Lyman J. Briggs,
Director, National Bureau of Standards.

Promulgation approved.

Jesse H. Jones,
Secretary of Commerce.

GAGE BLANKS

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COMMERCIAL STANDARD CS8-41

CONTENTS

SCOPE

1. This standard covers standard designs for plain and thread plug gage blanks to 12.010 inches maximum gaging diameter; plain and thread ring gage blanks to 12.260 inches maximum gaging diameter; adjustable snap gages to 12 inches; adjustable length gages to any desired length; twin ring gages or combination ring and snap gages for work up to 1.135 inches diameter; dial indicators up to 3¾ inches nominal bezel diameter; and master disks up to 8.010 inches in diameter. Recommended general designs covering spline plug and ring gages, taper plug and ring gages, flush-pin gages, and flat plug gages are also included.

TERMINOLOGY

2. The following glossary is intended to clarify the meaning of certain technical terms employed in this report. The definitions are not intended to be general; rather they are specific as to their application to the American Gage Design Standards.

American Gage Design Standard.—The caption "American Gage Design Standard" has been adopted to designate gages made to the design specifications promulgated by the American Gage Design Committee.

Adjusting slots are radial slots provided in thread ring gages in order to facilitate expansion and contraction of gage size by means of the adjusting device. An adjusting slot always terminates in an *adjusting slot terminal hole.*

The term *anvil* is employed to designate the gaging member of a snap gage when constructed as a fixed nonadjustable block, or as the integral jaw of the gage.

A *dial indicator* is a mechanism for amplifying and measuring the displacement of a movable contact point, thereby measuring a dimension or variations from a standard dimension, comprising essentially a case with means for mounting the indicator, a spindle carrying the contact point, an amplifying mechanism, a pointer, and a graduated dial.

The *drift hole* or *drift slot* is a small hole or slot provided in the side of a taper lock gage handle near the "go" end through which a pin or drift may be inserted for the purpose of ejecting the gaging member from the handle.

The *flange* is that external portion of a large ring gage which is reduced in section for the purpose of lightening the gage.

The *frame* of a snap gage is the body portion of the gage as distinct from the gaging pins, gaging buttons, anvils, and adjusting or locking mechanism.

A *flush-pin gage* is a gage for checking the distance between two surfaces, comprising a body having a through hole, and a pin in the hole which projects from a face of the body a distance equal to the dimension to be gaged when the opposite or indicating end of the pin is flush with the opposite face of the body. The indicating end of the pin, or the adjacent face of the body, has a step of a depth equal to the tolerance on the dimension gaged.

A *gaging button* is an adjustable gaging member of an adjustable snap or length gage, consisting of a shank and a flanged portion, the latter constituting the gaging section.

The *gaging member* is that integral unit of a gage which is accurately finished to size and is employed for size control of the work. In taper lock plug gages, the gaging member consists of a shank and a gaging section.

A *gaging pin* is a straight, unflanged adjustable gaging member of an adjustable snap gage.

The *gaging section* is that portion of the gage which comes into physical contact with the work. In the plug range above 1.510 to and including 12.010 inches, the gaging section is identical with the gaging member.

The *handle* is that portion of a gage which is employed as supporting means for the gaging member or members. In the American Gage Design Standards, three types of handles are employed, namely, the taper lock design handle, the reversible design handle, and the ball handle.

The *hub* is the midsection of a flanged ring gage. It determines the length of the gaging section.

An *adjustable length gage* is a complete external caliper gage employed for the size control of relatively large external dimensions, comprising a length gage spacing bar and length gage heads.

Length gage heads are the end portions of a length gage carrying and including the gaging members, which can be set and locked to any predetermined size within the range of adjustment.

A *length gage spacing bar* is the central portion of a length gage which carries at its extermities the two length gage heads.

Lightening holes are unfinished drilled holes provided in the heavier sizes of gaging members for the sole purpose of reducing the weight of the gage.

The *locking slot* is that slot which passes entirely through the wall of a thread ring gage. In conjunction with the thread ring gage locking device, it permits expansion and contraction of gage size.

A *marking disk* is a plate which can be attached to a gage frame to provide, when suitably marked, a means of identification for the gage.

A *master disk* is a cylinder provided with insulating grips, used for setting comparators, snap gages, etc.

An *annular plug gage* is a shell type plug gage in which the gaging member is in the form of a ring, the external surface of which is the gaging section, the central portion of the web being machined away for the purpose of reducing weight, ball handles being provided for convenience in handling. This construction is employed for plain and thread plug gages in the ranges above 8.010 inches.

A *flat plug gage* is a plug gage made in the form of a diametral section of a plain cylindrical plug gage.

A *plain cylindrical plug gage* is a complete unthreaded internal gage of single- or double-ended type for the size control of holes. It consists of handle and gaging member or members, with suitable locking means.

A *progressive cylindrical plug gage* is a complete unthreaded internal gage consisting of handle and gaging member in which the "go" and "not go" gaging sections are combined in a single unit secured to one end of the handle.

A *reversible or trilock plug gage* is a plug gage in which three wedge-shaped *locking prongs* on the handle are forced into corresponding *locking grooves* in the gaging member by means of a single through screw, thus providing a self-centering support with a positive lock. This design is standard for all plug gages in the ranges above 1.510 to and including 8.010 inches, with the exception of pipe thread plug gages, for which it is standard in the ranges above 2-inch nominal pipe size, to and including 6-inch nominal pipe size.

A *spline plug gage* is a plug gage having a series of projecting keys equally spaced about the periphery, which fit into the splineways to be gaged.

A *taper plug gage* is an internal gage for the size control of conical holes, which has a tapered gaging member but otherwise is similar to a plain cylindrical plug gage.

A *taper lock plug gage* is a plug gage in which the gaging member has a taper shank, which is forced into a taper hole in the handle. This design is standard for all plug gages in the range above 0.059 inch to and including 1.510 inches, and for pipe-thread plug gages up to and including 2-inch nominal pipe size.

A *thread plug gage* is a complete internal thread gage of either single- or double-ended type, comprising handle and threaded gaging member or members, with suitable locking means.

A *plain ring gage* is an unthreaded external gage of circular form employed for the size control of external diameters. In the smaller sizes it may consist of a gage body into which is pressed a *bushing*, the latter being accurately finished to size for gaging purposes.

A *spline ring gage* is a ring gage having keys which are complementary to the splined shaft to be gaged.

A *taper ring gage* is an external gage for the size control of tapered shafts or conical internal members.

A *thread ring gage* is an external thread gage employed for the size control of threaded work, means of adjustment being provided integral with the gage body.

The *thread ring gage locking device* provides a means of expanding and contracting the thread ring gage during the manufacturing or resizing processes. It is also an effectual lock. It comprises an *adjusting screw*, a *locking screw*, and a *sleeve*. For detailed description and illustration see page 27.

The *shank* is that portion of the gaging member which is employed for fixing the gaging member in the handle or frame.

A *plain adjustable snap gage* is a complete external caliper gage employed for the size control of plain external dimensions, comprising an open frame, in both jaws of which gaging members are provided, one or more pairs of which can be set and locked to any predetermined size within the range of adjustment.

A *plain solid snap gage* is a complete external caliper gage employed for the size control of plain external dimensions, comprising an open frame and jaws, the latter carrying gaging members in the form of fixed, parallel, nonadjustable anvils.

A *snap gage adjusting screw* is a threaded member employed for adjusting to any predetermined setting the gaging pins or gaging buttons of an adjustable snap or length gage.

The *snap gage locking device* is that portion of an adjustable snap or length gage which is employed for locking the adjustable gaging members in fixed position. It comprises a *locking screw*, a *locking bushing*, and a *locking nut*. For detailed description see figure 7, page 38.

DETAILS OF CONSTRUCTION, AMERICAN GAGE DESIGN STANDARDS

PLAIN CYLINDRICAL PLUG GAGE BLANKS

3. Three separate designs have been adopted for plain cylindrical plug gages—the *taper lock* design for the range from 0.059 to and including 1.510 inches, the *reversible* or *trilock* design with reversible gaging members for the range from above 1.510 to and including 8.010 inches, and the *annular* design for the range from above 8.010 to and including 12.010 inches. For sizes above 0.240 inch to and including 2.510 inches, both straight and progressive gaging members are provided.

(a) TAPER LOCK DESIGN, ABOVE 0.059 TO AND INCLUDING 1.510 INCHES

4. It was felt that the taper lock design was particularly well suited for the smaller sizes of plain plug gages. This type of gage is simple and is economical of production and maintenance. The gaging member has a taper shank which is forced into a taper hole in the handle. When properly assembled, the taper lock gage possesses the rigidity of a solid gage and is entirely free of shake or "wink." Drift slots or drift holes are provided near one end of the handle, permitting gaging members to be removed when replacement is necessary. In the case of double-end gages, one end is removed by running a rod through the hollow handle. In the smaller size ranges above 0.059 inch to and including 0.240 inch, a groove is provided near one end of the handle to designate the "not go" end, as the length of the "go" member in this range is often insufficient to distinguish it clearly from the "not go" member. The groove is omitted as unnecessary above 0.240 inch.

5. Complete dimensional tolerances have been established for the mating parts of gaging members and handles, insuring absolute interchangeability of gaging members and handles wherever manufactured. General details of construction will be apparent from figure 1, page 6. See also tables 1 to 4, pages 8 to 12.

(b) REVERSIBLE OR TRILOCK DESIGN, ABOVE 1.510 TO AND INCLUDING 8.010 INCHES

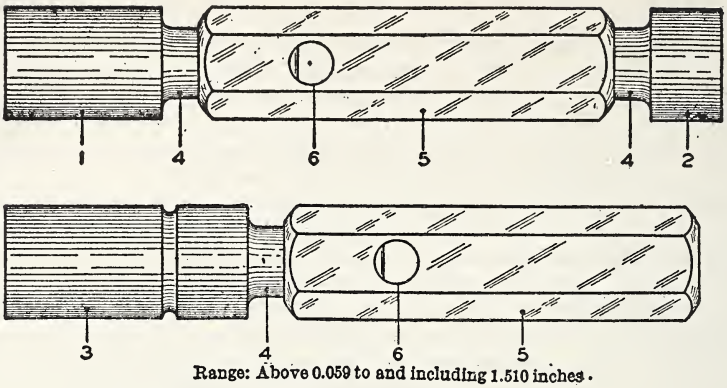
6. Considerations of rigidity of construction and long life have dictated the choice of the reversible or trilock design for the size range above 1.510 to and including 8.010 inches. With this construction there is no chance for shake or "wink" to interfere with the sensitive feel so necessary in gages of this type. Three wedge-shaped locking prongs on the handle are forced into corresponding grooves in the gaging member by a single through screw, thus providing a self-centering support with a positive lock, and resulting in a degree of rigidity equivalent to that of a solid gage. The useful life of the plug is furthermore materially increased, as when one end is worn the plug can be reversed, and is then, for most purposes, as good as new.

7. The construction is protected by carefully worked out dimensional limits, and interchangeability is insured between gaging members and handles wherever manufactured. Details of construction will be apparent from figure 1, page 6, and figure 2, page 10. See also tables 5 and 6, pages 13 and 14.

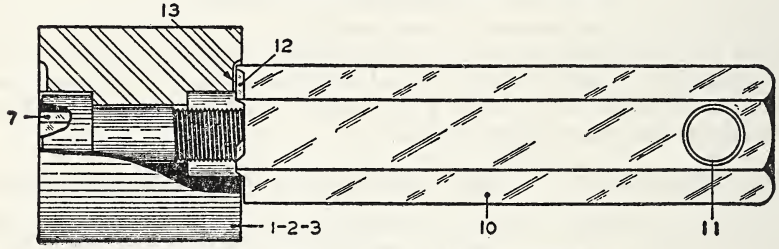
(c) ANNULAR DESIGN, ABOVE 8.010 TO AND INCLUDING 12.010 INCHES

8. Because of the fact that large plug gages are heavy and difficult to handle, it was necessary to adopt a design for the range above 8.010 inches which would have the lightest possible section consistent with strength and permanence. The annular design having a rim and web of properly proportioned section, the center being bored out for purposes of weight reduction, has, therefore, been adopted as standard. The web is provided with four tapped holes for convenience in bolting to face plate during manufacturing. Two of these are further employed for fixing ball handles to the gaging member.

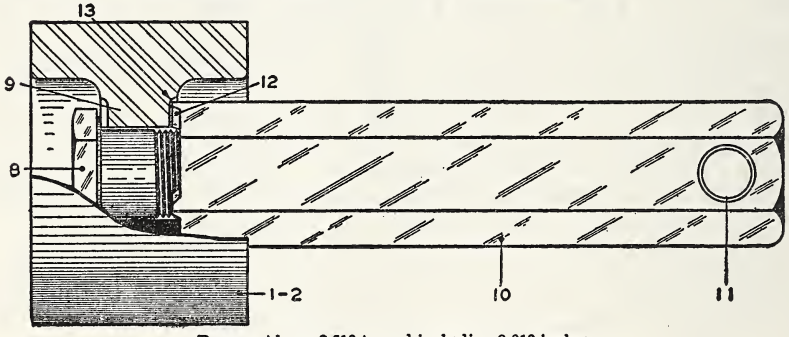
9. Details of construction have been worked out and are completely dimensioned in table 7, page 15.



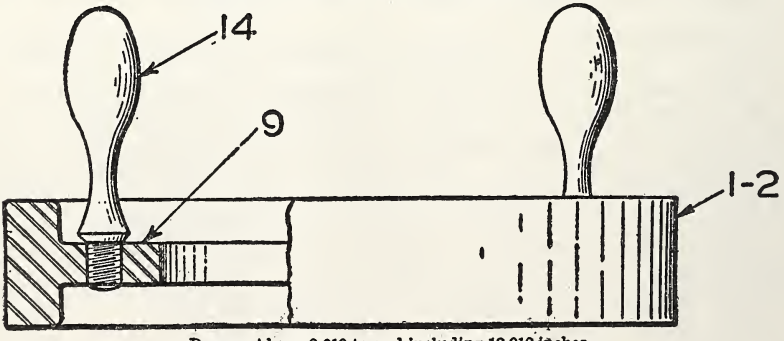
Range: Above 0.059 to and including 1.510 inches.



Range: Above 1.510 to and including 2.510 inches.



Range: Above 2.510 to and including 8.010 inches.



Range: Above 8.010 to and including 12.010 inches.

FIGURE 1.—*American Gage Design Standard plain cylindrical plug gages.*

DETAILS OF CONSTRUCTION, FIGURE 1

1. "Go" gaging member.
2. "Not go" gaging member.
3. Progressive gaging member.
4. Shank.
5. Taper lock handle.
6. Drift hole (or slot).
7. Socket head screw.
8. Hexagon head screw.
9. Web.
10. Handle for reversible gage.
11. Cross-pin hole.
12. Locking prong.
13. Locking groove.
14. Ball handle.

HANDLES FOR PLAIN CYLINDRICAL AND THREAD PLUG GAGE BLANKS

10. Handles for both taper lock and reversible or trilock gages are of the hexagonal type, while commercial ball handles are employed for the annular plug gage and for certain of the larger ring thread gages. Taper lock and reversible or trilock handles are completely dimensioned in tables 1 and 2, and figure 2. Ball handles, being a commercial merchantable product, are not specifically dimensioned, but minimum dimensions are set forth in figure 2, page 10.

11. Handles as designed for all gages offer a feature of economy in that they may be disassembled from gaging members when the latter are worn out or discarded for any other reason, and may then be reassembled with new gaging members, thus giving them, with reasonable care, practically indefinite life.

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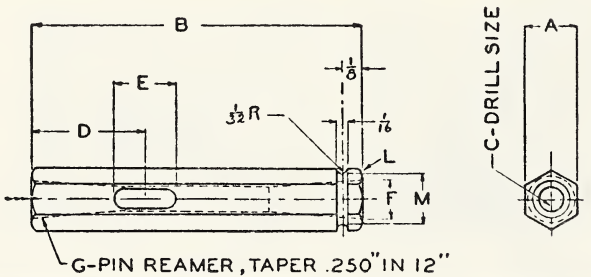
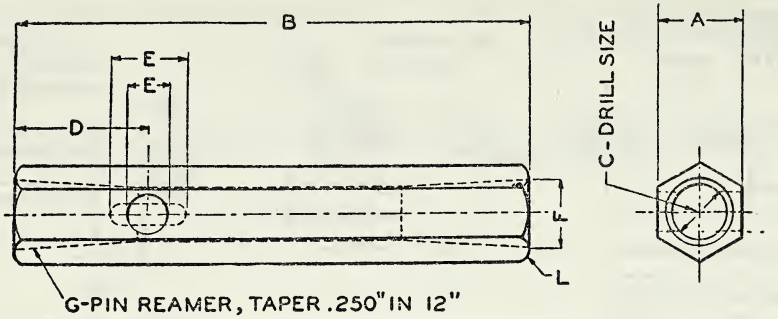
TABLE 1.—*Handles for plain cylindrical and thread plug gages, taper lock design, range above 0.059 to and including 0.240 inch*



Handle size No.	Nominal range, thread plug diameters, inclusive		Decimal range, plain and thread plug diameters		General dimensions										
	From—	To—	Above—	To and including—	*A*	*B*	*C* Drill size	*D*	*E*	*F* Min.	*F* Max.	*G*	*L*	*M* Min.	*M* Max.
	No.	*No.*	*Inch*	*Inch*	*Inch*	*Inches*		*Inch*	*Inch*	*Inch*	*Inch*	*No.*	*Inch*	*Inch*	*Inch*
000	0	3	0. 059	0. 105	3/16	1½	No. 34 (0. 111)	9/16	5/64 by ¼	0. 125	0. 126	000	1/32	0. 172	0. 177
00	4	6	. 105	. 150	¼	1¾	No. 29 (0. 136)	⅝	3/32 by 5/16	. 155	. 156	0	1/32	. 235	. 240
0	8	12	. 150	. 240	5/16	2	No. 20 (0. 161)	11/16	⅛ by ⅜	. 180	. 181	2	1/32	. 297	. 302

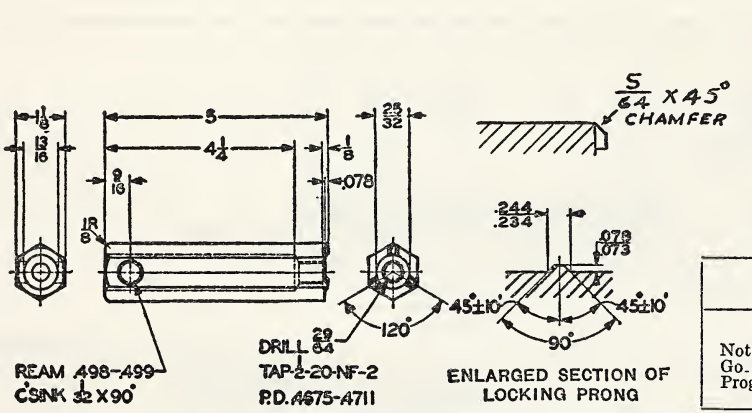
NOTE.—The purpose of the groove in the "not go" end of the handle is to distinguish the "not go" from the "go" end.

TABLE 2.—*Handles for plain cylindrical and thread plug gages, taper lock design, range above 0.240 to and including 1.510 inches*



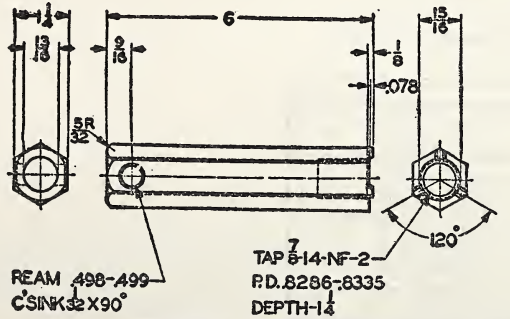
Handle size No.	Nominal range, thread plug diameters, inclusive		Decimal range, plain and thread plug diameters		General dimensions								
	From—	To—	Above—	To and including—	*A*	*B*	*C* Drill size	*D*	*E*	*F* Min.	*F* Max.	*G*	*L*
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*		*Inches*	*Inch*	*Inch*	*Inch*	*No.*	*Inch*
1	1/4	5/16	0. 240	0. 365	3/8	2 3/4	7/32	25/32	1/8 by 1/2	0. 239	0. 240	4	1/16
									Diameter				
2	3/8	1/2	. 365	. 510	1/2	3	L (0.290)	25/32	15/64	. 309	. 310	6	1/16
3	9/16	3/4	. 510	. 825	11/16	3 1/4	25/64	27/32	11/32	. 409	. 410	7	3/32
4	7/8	1 1/8	. 825	1. 135	7/8	3 5/8	37/64	63/64	3/8	. 609	. 610	10	3/32
5	1 1/4	1 1/2	1. 135	1. 510	1 1/8	4	25/32	1 1/8	7/16	. 809	. 810	11	1/8

NOTE.—Taper lock handles are standard for all taper pipe thread plug gages up to and including 2-inch nominal pipe size (see table 11, p. 20).

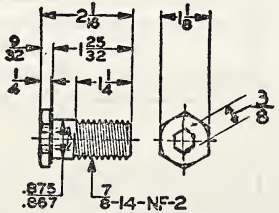


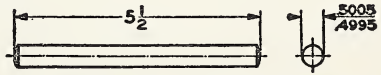
Plug	B	C	E
	Inches	*Inch*	*Inches*
Not go	1½	3/8	1¼
Go	2¼	½	1½
Progressive	3¼	½	2⅛

No. 6 handle. Range: Above 1.510 to and including 2.510 inches.

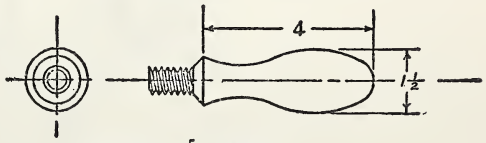


No. 7 handle. Range: Above 2.510 to and including 8.010 inches.





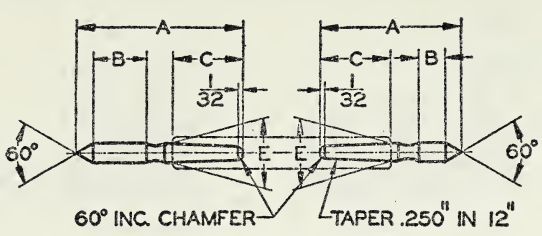
Cross bar, nos. 6 and 7 handles (optional).



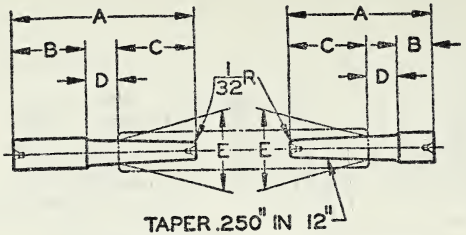
No. 8 handle (commercial no. 8 ball handle). Range: Above 8.010 to and including 12.010 inches.

FIGURE 2.—*Handles for plain cylindrical and thread plug gages, reversible or trilock design, range above 1.510 to and including 8.010 inches; and annular design, range above 8.010 to and including 12.010 inches.*

TABLE 3.—*Plain cylindrical plug gaging members, taper lock design, range above 0.059 to and including 0.240 inch*



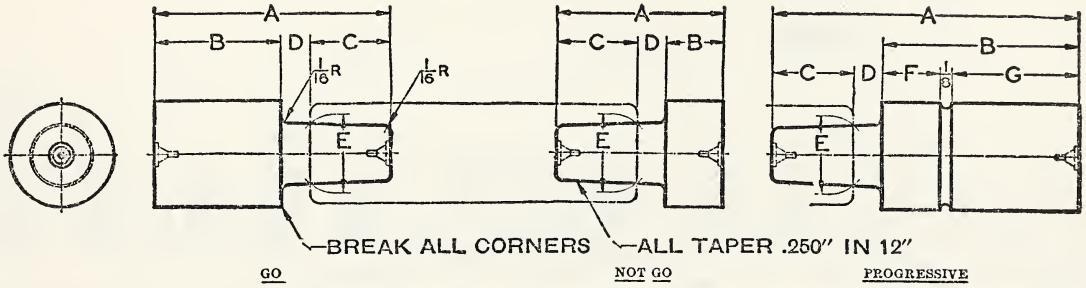
ABOVE 0.059 TO AND INCLUDING 0.150 INCH



ABOVE 0.150 TO AND INCLUDING 0.240 INCH

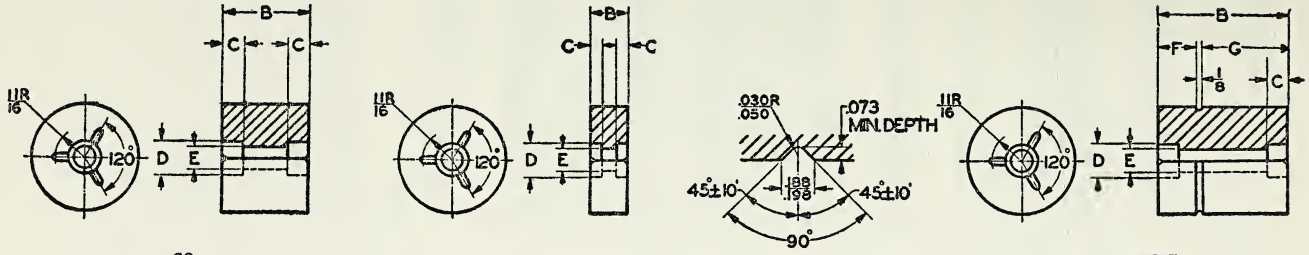
Handle size No.	Range in diameters		General dimensions											
			Go						Not go					
							E						E	
	Above—	To and including—	A	B	C	D	Min.	Max.	A	B	C	D	Min.	Max.
	Inch	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
000	0. 059	0. 105	1 5/32	3/8	1/2	------	0. 125	0. 126	3 1/32	3/16	1/2	------	0. 125	0. 126
00	. 105	. 150	1 11/32	7/16	9/16	------	. 155	. 156	1 1/8	7/32	9/16	------	. 155	. 156
0	. 150	. 240	1 15/32	19/32	5/8	1/4	. 180	. 181	1 5/32	9/32	5/8	1/4	. 180	. 181

TABLE 4.—*Plain cylindrical plug gaging members, taper lock design, range above 0.240 to and including 1.510 inches*



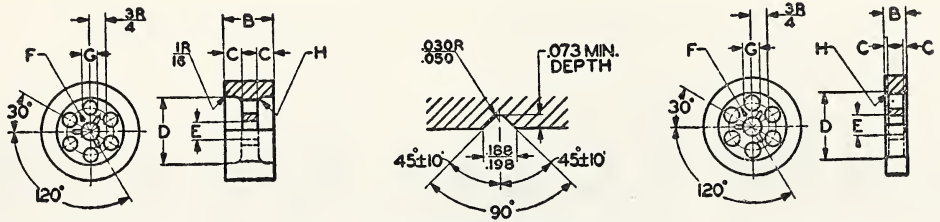
Handle size No.	Range in diameters		General dimensions																			
			Go						Not go						Progressive							
	Above	To and including—	A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		F	G
							Min.	Max.					Min.	Max.					Min.	Max.		
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In	In.	In.	In.	In.	In.	In.
1	0. 240	0. 365	1 3/4	3/4	3/4	1/4	0. 239	0. 240	1 5/16	5/16	3/4	1/4	0. 239	0. 240	2 3/16	1 3/16	3/4	1/4	0. 239	0. 240	5/16	3/4
2	. 365	. 510	2	1	3/4	1/4	. 309	. 310	1 3/8	3/8	3/4	1/4	. 309	. 310	2 1/2	1 1/2	3/4	1/4	. 309	. 310	3/8	1
3	. 510	. 825	2 1/4	1 1/4	3/4	1/4	. 408	. 410	1 1/2	1/2	3/4	1/4	. 408	. 410	2 7/8	1 7/8	3/4	1/4	. 408	. 410	1/2	1 1/4
4	. 825	1. 135	2 9/16	1 3/8	7/8	5/16	. 608	. 610	1 13/16	5/8	7/8	5/16	. 608	. 610	3 5/16	2 1/8	7/8	5/16	. 608	. 610	5/8	1 3/8
5	1. 135	1. 510	2 7/8	1 1/2	1	3/8	. 808	. 810	2 1/8	3/4	1	3/8	. 808	. 810	3 3/4	2 3/8	1	3/8	. 808	. 810	3/4	1 1/2

TABLE 5.—*Plain cylindrical plug gaging members, reversible or trilock design, range above 1.510 to and including 2.510 inches*



Handle size no.	Plain plug diameters				Go				Not go				Progressive					
	Nominal range, inclusive		Decimal range		*B*	*C*	*D*	*E*	*B*	*C*	*D*	*E*	*B*	*C*	*D*	*E*	*F*	*G*
	From—	To—	Above—	To and including—														
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*
6	1½	2	1. 510	2. 010	1⅞	½	25/32	17/32	⅞	9/32	25/32	17/32	2⅞	½	25/32	17/32	⅞	1⅞
6	2	2½	2. 010	2. 510	2	½	25/32	17/32	⅞	9/32	25/32	17/32	3	½	25/32	17/32	⅞	2

TABLE 6.—*Plain cylindrical plug gaging members, reversible or trilock design, range above 2.510 to and including 8.010 inches*



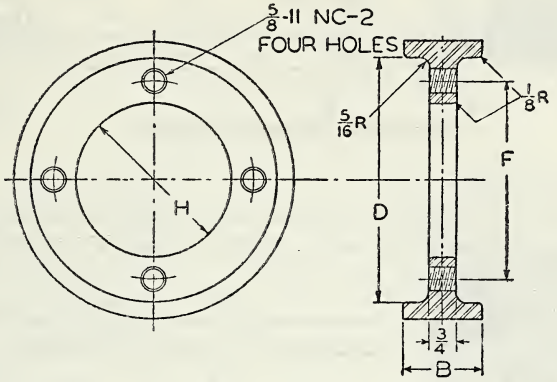
GO

ENLARGED SECTION OF LOCKING GROOVE
3 REQUIRED ON BOTH ENDS OF ALL GAGES

NOT GO

Handle size No.	Plain plug diameters				Go							Not go						
	Nominal range, inclusive		Decimal range		B	C	D	E	F	G	H	B	C	D	E	F	G	H
	From—	To—	Above—	To and including—														
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inches*	*Inch*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inches*	*Inches*	*Inch*
7	2½	3	2. 510	3. 010	2⅛	1 1/16	1⅞	29/32	-----	-----	3/16	1	⅛	1⅞	29/32	-----	-----	3/16
7	3	3½	3. 010	3. 510	2¼	¾	2¼	29/32	-----	-----	5/16	1	⅛	2¼	29/32	-----	-----	3/16
7	3½	4	3. 510	4. 010	2¼	¾	2⅝	29/32	-----	-----	5/16	1	⅛	2⅝	29/32	-----	-----	3/16
7	4	4½	4. 010	4. 510	2¼	¾	3	29/32	1 1/16	¾	5/16	1	⅛	3	29/32	1 1/16	¾	3/16
7	4½	5	4. 510	5. 010	2¼	¾	3 7/16	29/32	1 3/16	13/16	5/16	1	⅛	3 7/16	29/32	1 3/16	13/16	3/16
7	5	5½	5. 010	5. 510	2¼	¾	3⅞	29/32	1¼	⅞	5/16	1	⅛	3⅞	29/32	1¼	⅞	3/16
7	5½	6	5. 510	6. 010	2¼	¾	4 5/16	29/32	1⅜	1	5/16	1	⅛	4 5/16	29/32	1⅜	1	3/16
7	6	6½	6. 010	6. 510	2¼	¾	4¾	29/32	1½	1⅛	5/16	1	⅛	4¾	29/32	1½	1⅛	3/16
7	6½	7	6. 510	7. 010	2¼	¾	5¼	29/32	1⅝	1¼	5/16	1	⅛	5¼	29/32	1⅝	1¼	3/16
7	7	7½	7. 010	7. 510	2¼	¾	5¾	29/32	1¾	1⅜	5/16	1	⅛	5¾	29/32	1¾	1⅜	3/16
7	7½	8	7. 510	8. 010	2¼	¾	6¼	29/32	1⅞	1½	5/16	1	⅛	6¼	29/32	1⅞	1½	3/16

TABLE 7.—*Plain cylindrical plug gaging members, annualar design, range above 8.010 to and including 12.010 inches*

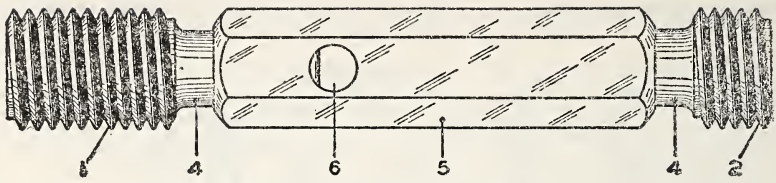


Handle size No. [1]	Plain plug diameters				B		D	F	H
	Nominal range, inclusive		Decimal range						
	From—	To—	Above—	To and including—	Go	Not go			
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inches*	*Inches*	*Inches*
8	8	8½	8. 010	8. 510	2¼	1	6½	5¼	4
8	8½	9	8. 510	9. 010	2¼	1	7	5⅝	4⅜
8	9	9½	9. 010	9. 510	2¼	1	7½	6	4¾
8	9½	10	9. 510	10. 010	2¼	1	8	6½	5⅛
8	10	10½	10. 010	10. 510	2¼	1	8½	7	5½
8	10½	11	10. 510	11. 010	2¼	1	9	7½	5⅞
8	11	11½	11. 010	11. 510	2¼	1	9½	8	6¼
8	11½	12	11. 510	12. 010	2¼	1	10	8½	6⅝

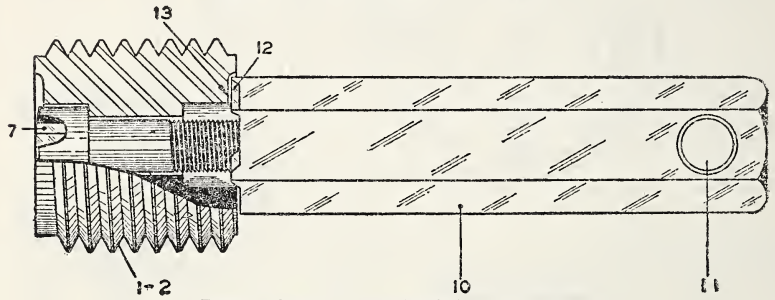
[1] 2 required.

THREAD PLUG GAGE BLANKS

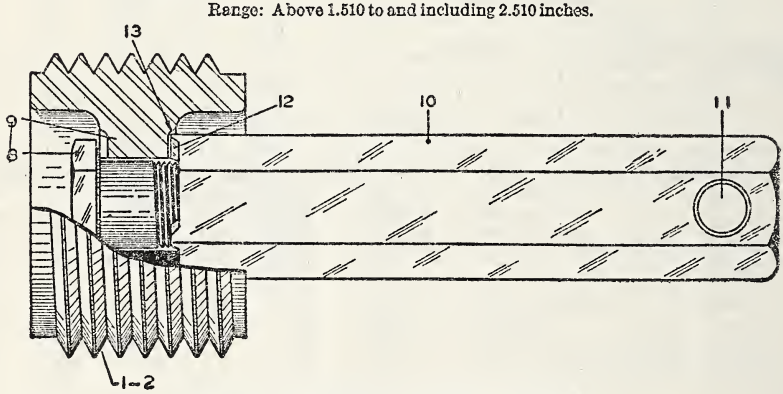
12. The taper lock, reversible or trilock, and annualar designs have been adopted for thread plug gage blanks and handles and follow the plain cylindrical plug gage designs described on pages 4 to 7 with the exception that the length of thread gaging members is slightly different in some instances and the use of taper lock blanks and handles for pipe-thread plug gages is standard to and including 2 inches nominal pipe size. General details of construction will be apparent from figure 3, page 16. Data sheets for thread plug gages are presented in tables 8 to 14, pages 17 to 23. A separate table (No. 10) setting forth dimensions of gaging members for thread setting plugs is given on page 19. Another table (No. 11) specifying the taper lock handles and gaging members for pipe-thread plug gages is set forth on page 20.



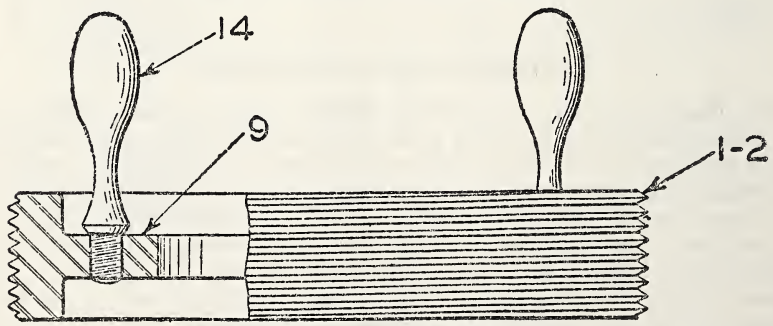
Range: No 0 to and including 1.510 inches.



Range: Above 1.510 to and including 2.510 inches.



Range: Above 2.510 to and including 8.010 inches.

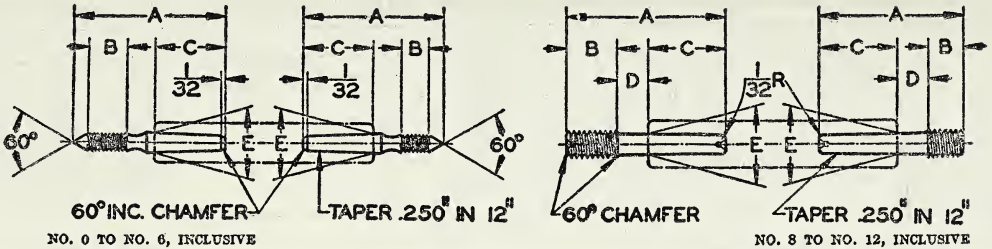


Range: Above 8.010 to and including 12.010 inches.

FIGURE 3.—*American Gage Design Standard thread plug gages, details of construction.*

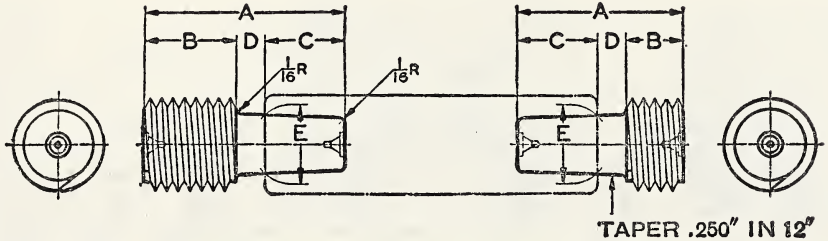
1. "Go" gaging member.
2. "Not go" gaging member.
4. Shank.
5. Taper lock handle.
6. Drift hole (or slot).
7. Socket head screw.
8. Hexagon head screw.
9. Web.
10. Handle for reversible or trilock gage.
11. Cross-pin hole.
12. Locking prong.
13. Locking groove.
14. Ball handle.

TABLE 8.—*Thread plug gaging members, taper lock design, range no. 0 to no. 12, inclusive*



Handle size No.	Range, thread plug diameters				General dimensions											
	Nominal, inclusive		Decimal		Go						Not go					
	From—	To—	Above—	To and including—	*A*	*B*	*C*	*D*	*E*		*A*	*B*	*C*	*D*	*E*	
									Min.	Max.					Min.	Max.
	No.	*No.*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
000	0	3	0. 059	0. 105	1 1/32	1/4	1/2	------	0. 125	0. 126	31/32	3/16	1/2	------	0. 125	0. 126
00	4	6	. 105	. 150	1 7/32	5/16	9/16	------	. 155	. 156	1 1/8	7/32	9/16	------	. 155	. 156
0	8	12	. 150	. 240	1 9/32	13/32	5/8	1/4	. 180	. 181	1 5/32	9/32	5/8	1/4	. 180	. 181

TABLE 9.—*Thread plug gaging members, taper lock design, range ¼ to 1½ inches, inclusive*

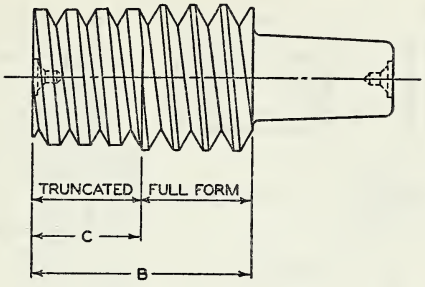


Not less than three full threads must remain on "Not go" plug

Handle size No.	Range				Threads per inch	General dimensions											
	Thread plug diameters					Go						Not go					
	Nominal range, inclusive		Decimal range			A	B	C	D	E		A	B	C	D	E	
	From—	To—	Above—	To and including—						Min.	Max.					Min.	Max.
	Inches	*Inches*	*Inches*	*Inches*		*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
1	¼	5/16	0. 240	0. 365		1½	½	¾	¼	0. 239	0. 240	1 5/16	5/16	¾	¼	0. 239	0. 240
2	⅜	½	. 365	. 510		1¾	¾	¾	¼	. 309	. 310	1⅜	⅜	¾	¼	. 309	. 310
3	9/16	¾	. 510	. 825		1⅞	⅞	¾	¼	. 408	. 410	1½	½	¾	¼	. 408	. 410
4	⅞	1⅛	. 825	1. 135		2 3/16	1	⅞	5/16	. 608	. 610	1 13/16	⅝	⅞	5/16	. 608	. 610
5	1¼	1½	1. 135	1. 510	Coarser than 12	2⅝	1¼	1	⅜	. 808	. 810	2⅛	¾	1	⅜	. 808	. 810
5	1¼	1½	1. 135	1. 510	12 and finer	2⅜	1	1	⅜	. 808	. 810	2⅛	¾	1	⅜	. 808	. 810

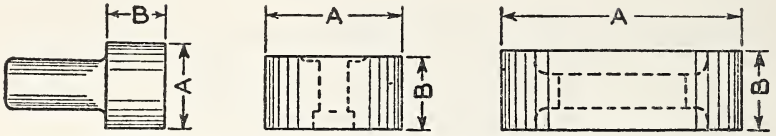
NOTE.—Taper lock gaging members are standard for all taper pipe thread plug gages up to and including 2-inch nominal pipe size. (See table 11, p. 20.)

TABLE 10.—*Thread setting plug gaging members, truncated type, range No. 0 to 1½ inches, inclusive*



Handle size No.	Thread diameters				Lengths			
	Nominal range, inclusive		Decimal range		*B*		*C*	
	From—	To—	Above—	To and including—	For thin ring	For thick ring	For thin ring	For thick ring
	No.	*No.*	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inches*
000	0	3	0. 059	0. 105	3/8	------	3/16	------
00	4	6	. 105	. 150	7/16	------	3/16	------
0	8	12	. 150	. 240	19/32	------	1/4	------
	Inches	*Inches*						
1	1/4	5/16	. 240	. 365	3/4	------	11/32	------
2	3/8	1/2	. 365	. 510	1	------	7/16	------
3	9/16	3/4	. 510	. 825	1 1/4	1 1/2	9/16	3/4
4	7/8	1 1/8	. 825	1. 135	1 3/8	1 7/8	11/16	15/16
5	1 1/4	1 1/2	1. 135	1. 510	1 1/2	2 1/4	3/4	1 1/8

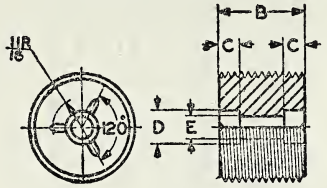
TABLE 11.—*Pipe thread plug gaging members, range ⅛ to 8 inches, inclusive*



Nominal pipe size	Handle size No.	Type blank	*A*	*B*
Inches			*Inches*	*Inches*
⅛	2	Taper lock	7/16	0. 310
¼	3	do	9/16	. 450
⅜	3	do	11/16	. 460
½	4	do	⅞	. 580
¾	4	do	1 1/16	. 600
1	5	do	1⅜	. 740
1¼	5	do	1 11/16	. 770
1½	5	do	1 15/16	. 790
2	5	do	2 7/16	. 830
2½	6	Reversible	2 15/16	1. 210
3	6	do	3 9/16	1. 300
3½	7	do	4 1/16	1. 350
4	7	do	4 9/16	1. 425
4½	7	do	5 1/16	1. 475
5	7	do	5⅝	1. 550
6	7	do	6¾	1. 700
8	8	Annular	8¾	1. 900

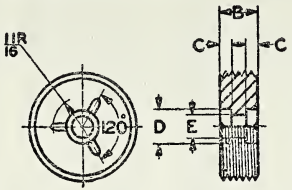
NOTE.—Taper lock gaging members and handles are standard for pipe thread plug gages to and including 2 inches nominal pipe size. The general dimensions of handles and gaging members which are referred to in this table are given in tables 2, 9, 12, 13, and 14, and figure 2.

TABLE 12.—*Thread plug gaging members, reversible or trilock design, range above 1½ to and including 2½ inches*

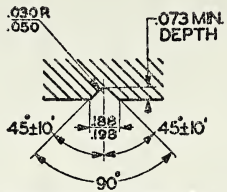


GO

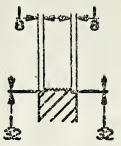
NOT LESS THAN THREE FULL THREADS MUST REMAIN ON "NOT GO" PLUG.



NOT GO



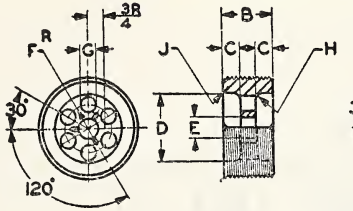
ENLARGED SECTION OF INTERNAL LOCKING MEMBER 3 REQUIRED ON BOTH ENDS OF ALL GAGES.



"NOT GO" GAGES 16 T.P.I. & FINER RELIEVED ON BOTH ENDS 1/32 BELOW SHARP ROOT OF THD. AS SHOWN.

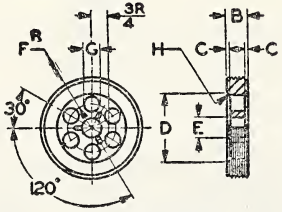
Handle size No.	Range, thread plug diameters		Go												Not go			
	Above—	To and including—	7 threads per inch and coarser				Finer than 7 threads per inch and coarser than 16				16 threads per inch and finer				All pitches			
			B	*C*	*D*	*E*	*B*	*C*	*D*	*E*	*B*	*C*	*D*	*E*	*B*	*C*	*D*	*E*
	Inches	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
6	1. 510	2. 010	1⅞	½	25/32	17/32	1¼	⅜	25/32	17/32	⅞	9/32	25/32	17/32	⅞	9/32	25/32	17/32
6	2. 010	2. 510	2	½	25/32	17/32	1⅜	⅜	25/32	17/32	⅞	9/32	25/32	17/32	⅞	9/32	25/32	17/32

TABLE 13.—*Thread plug gaging members, reversible or trilock design, range above 2½ to and including 8 inches*

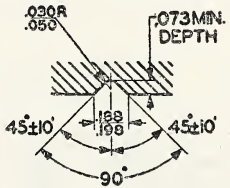


GO

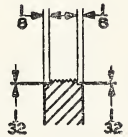
NOT LESS THAN THREE FULL THREADS MUST REMAIN ON "NOT GO" PLUG.



NOT GO



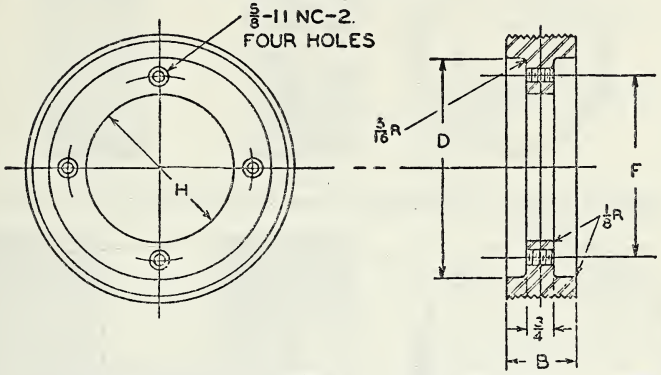
ENLARGED SECTION OF LOCKING GROOVE. 3 REQUIRED ON BOTH ENDS OF ALL GAGES.



"NOT GO" GAGES 16 T.P.I. & FINER RELIEVED ON BOTH ENDS 32 BELOW SHARP ROOT OF THRD. AS SHOWN.

Handle size No.	Thread plug diameters				Go											Not go			All			
	Nominal range, inclusive		Decimal range		7 threads per inch and coarser				Finer than 7 threads per inch and coarser than 16				16 threads per inch and finer			All pitches			All pitches			
	From—	To—	Above—	To and including—	B	C	H	J	B	C	H	J	B	C	H	B	C	H	D	E	F	G
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inches*	*Inches*
7	2½	3	2.510	3.010	2⅛	11/16	3/16	1/16	1½	⅜	3/16	1/16	1	⅛	3/16	1	⅛	3/16	1⅞	29/32		
7	3	3½	3.010	3.510	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	2¼	29/32		
7	3½	4	3.510	4.010	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	2⅝	29/32		
7	4	4½	4.010	4.510	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	3	29/32	1 1/16	¾
7	4½	5	4.510	5.010	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	3 7/16	29/32	1 3/16	13/16
7	5	5½	5.010	5.510	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	3⅞	29/32	1¼	⅞
7	5½	6	5.510	6.010	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	4 5/16	29/32	1⅜	1
7	6	6½	6.010	6.510	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	4¾	29/32	1½	1⅛
7	6½	7	6.510	7.010	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	5¼	29/32	1⅝	1¼
7	7	7½	7.010	7.510	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	5¾	29/32	1¾	1⅜
7	7½	8	7.510	8.010	2¼	¾	5/16	1/16	1½	⅜	¼	1/16	1	⅛	3/16	1	⅛	3/16	6¼	29/32	1⅞	1½

TABLE 14.—*Thread plug gaging members, annular design, range above 8 to and including 12 inches*



Handle size No.[1]	Thread plug diameters				Go			Not go	All		
	Nominal range, inclusive		Decimal range		7 threads per inch and coarser	Finer than 7 threads per inch and coarser than 16	16 threads per inch and finer	All pitches	All pitches		
	From—	To—	Above—	To and including—	*B*				*D*	*F*	*H*
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*	*Inch*	*Inch*	*Inches*	*Inches*	*Inches*
8	8	8½	8. 010	8. 510	2¼	1½	1	1	6½	5¼	4
8	8½	9	8. 510	9. 010	2¼	1½	1	1	7	5⅝	4⅜
8	9	9½	9. 010	9. 510	2¼	1½	1	1	7½	6	4¾
8	9½	10	9. 510	10. 010	2¼	1½	1	1	8	6½	5⅛
8	10	10½	10. 010	10. 510	2¼	1½	1	1	8½	7	5½
8	10½	11	10. 510	11. 010	2¼	1½	1	1	9	7½	5⅞
8	11	11½	11. 010	11. 510	2¼	1½	1	1	9½	8	6¼
8	11½	12	11. 510	12. 010	2¼	1½	1	1	10	8½	6⅝

[1] 2 required.

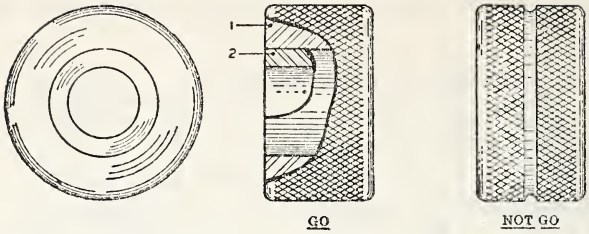
PLAIN RING GAGE BLANKS

13. The use of the solid ring gage design for external size control being fairly well established, the committee's work on plain ring gages was concerned chiefly with matters of proportion. In the smaller sizes of plain ring gages a hardened bushing may be pressed into a soft gage body, in place of the one-piece ring gage. This design is optional in the range above 0.059 to and including 0.510 inch. However, the single-piece gage may be employed in this range, and it is standard in all cases above 0.510 inch. Gages in sizes above 1.510 inches are flanged, in order to eliminate unnecessary weight and facilitate handling. General details of construction are shown in figure 4, page 24, and dimensions are given in tables 15 and 16, pages 25 and 26.

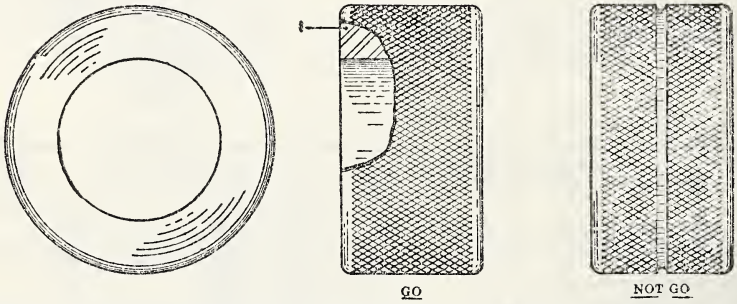
14. No dimensional difference exists between "go" and "not go" blanks of identical size range, but an annular groove is provided in the periphery of "not go" blanks as a means of identification.

15. Gages in sizes above 5.510 inches are provided with ball handles.

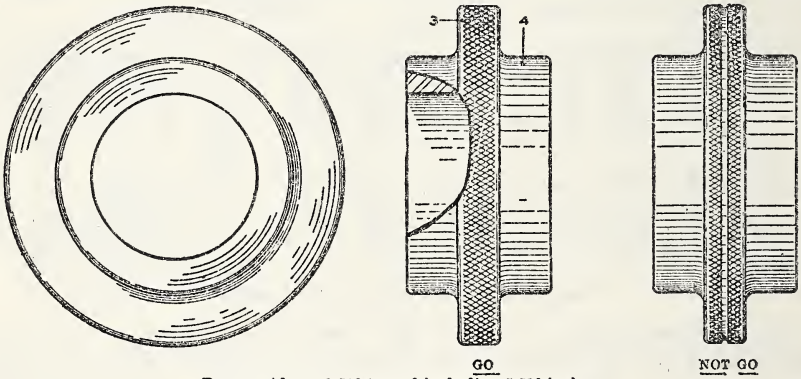
16. In designing the large plain and thread ring gage blanks, the general outside and over-all dimensions were made identical for both types of blanks.



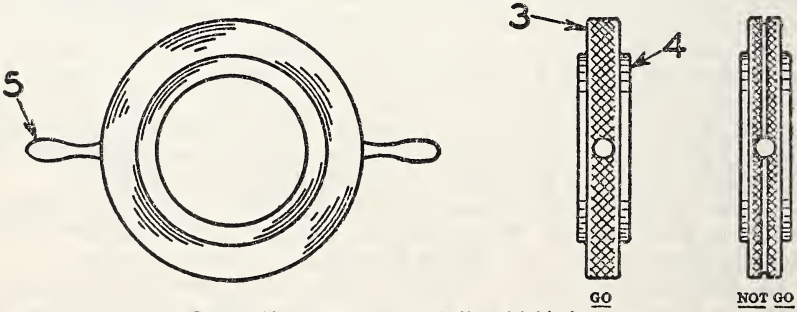
Range: Above 0.059 to and including 0.510 inch (solid design shown below is optional).



Range: Above 0.510 to and including 1.510 inches (optional above 0.059 to and including 0.510 inches).



Range: Above 1.510 to and including 5.510 inches.

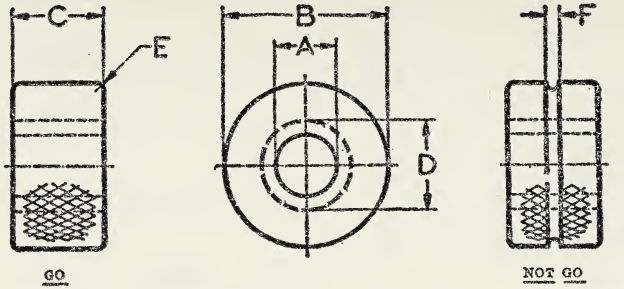


Range: Above 5.510 to and including 12.260 inches.

FIGURE 4.—*American Gage Design Standard plain ring gages, details of construction.*

1. Body.
2. Bushing.
3. Flange.
4. Hub.
5. Handle.

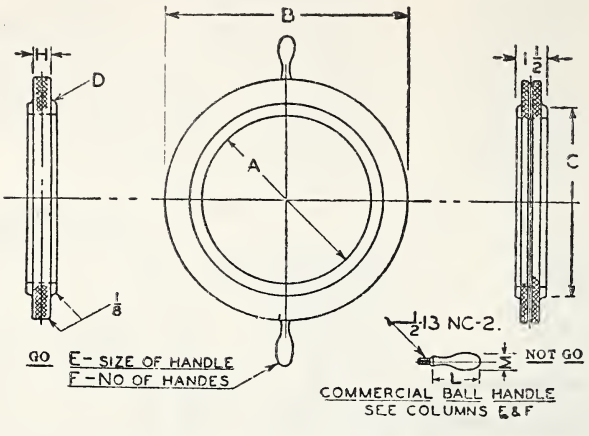
TABLE 15.—*Plain ring gages, range above 0.059 to and including 1.510 inches*



Ring size No.	A Range		General dimensions					
	Above—	To and including—	B Outside diameter	C Thickness	D Bushing diameter [1]	E Radius	F "Not go" groove width	Length of bushing
	Inches	*Inches*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	
00	0. 059	0. 150	15/16	3/16	3/8	1/32	1/32	(1 2)
0	. 150	. 240	15/16	3/8	7/16	1/32	1/16	(1 2)
1	. 240	. 365	1 1/8	9/16	9/16	1/16	3/32	(1 2)
2	. 365	. 510	1 3/8	3/4	3/4	1/16	3/32	(1 2)
3	. 510	. 825	1 3/4	15/16	(3)	3/32	3/32	(2)
4	. 825	1. 135	2 1/8	1 1/8	(3)	3/32	3/32	(3)
5	1. 135	1. 510	2 1/2	1 5/16	(3)	3/32	3/32	(3)

[1] Ring gages of sizes 00, 0, 1, and 2 may be of the bushing type or of the solid type, at the option of the manufacturer.
[2] Bushings may be 1/16 inch longer than ring thickness, but are ground flush after hole is finished.
[3] Sizes 3, 4, and 5 are solid.

TABLE 16.—*Plain ring gages, range above 1.510 to and including 12.260 inches*



Ring size No.	A Range		General dimensions					
	Above—	To and including—	B Outside diameter	C Hub diameter	D Radius	E Size of handle	F Number of handles	H Flange thickness
	Inches	*Inches*	*Inches*	*Inches*	*Inch*	*No.*		*Inch*
6	1.510	2.010	4	A+ 7/8	1/8	------	------	1/2
7	2.010	2.510	4 1/2	A+ 7/8	1/8	------	------	9/16
8	2.510	3.010	5	A+1	5/32	------	------	5/8
9	3.010	3.510	5 1/2	A+1	5/32	------	------	11/16
10	3.510	4.010	6 3/8	A+1 1/8	5/32	------	------	3/4
11	4.010	4.760	7 1/4	A+1 1/8	5/32	------	------	7/8
12	4.760	5.510	8 1/4	A+1 1/8	3/16	------	------	1
13	5.510	6.260	9 1/4	A+1 1/8	3/16	6	2	1
14	6.260	7.010	10 1/4	A+1 1/8	3/16	6	2	1
15	7.010	7.760	11 1/4	A+1 1/8	3/16	6	2	1
16	7.760	8.510	12 1/4	A+1 1/8	3/16	6	2	1
17	8.510	9.260	13 1/4	A+1 1/8	3/16	7	4	1
18	9.260	10.010	14 1/4	A+1 1/8	3/16	7	4	1
19	10.010	10.760	15 1/4	A+1 1/8	3/16	7	4	1
20	10.760	11.510	16 1/4	A+1 1/8	3/16	7	4	1
21	11.510	12.260	17 1/4	A+1 1/8	3/16	7	4	1

HANDLE DIMENSIONS

Handle No.	L	M
6	3 3/8	1 1/4
7	3 3/4	1 3/8

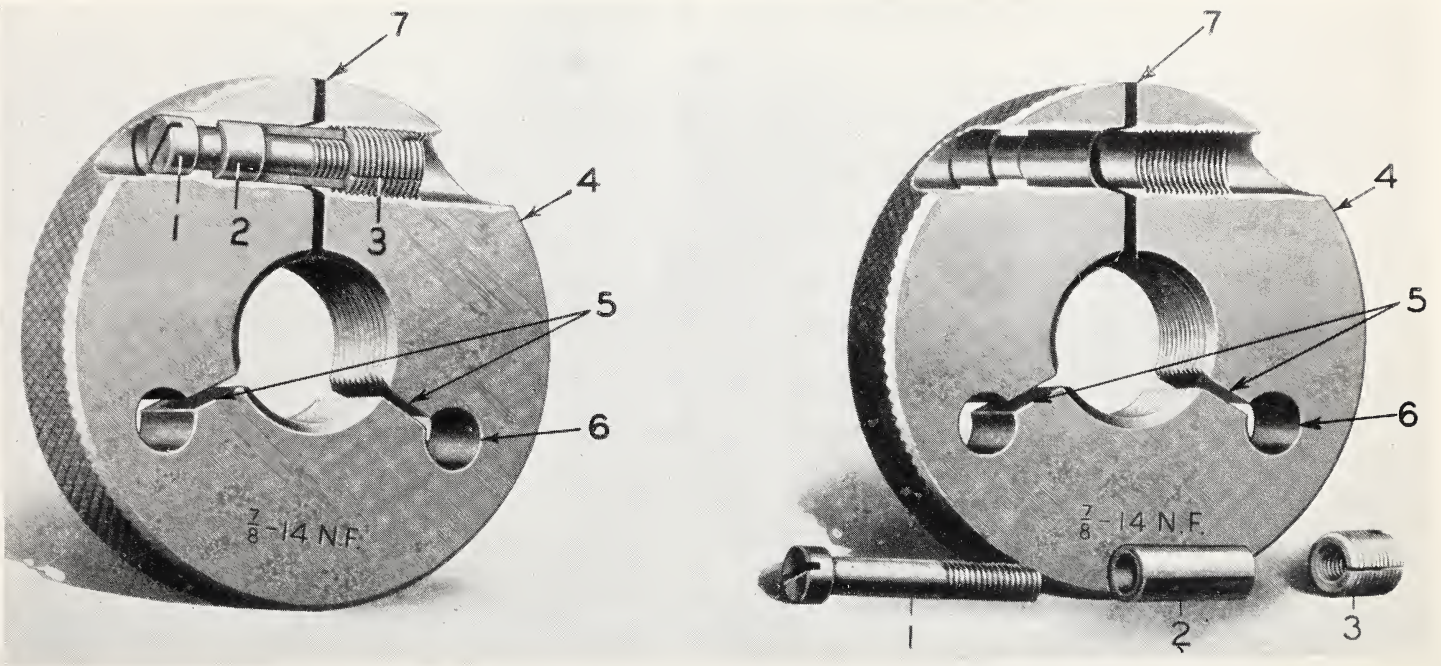


FIGURE 5.—*American Gage Design Standard thread ring gage locking device, details of construction, range No. 0 to 5½ inches, inclusive.*

1, Locking screw; *2*, sleeve; *3*, adjusting screw; *4*, body; *5*, adjusting slots; *6*, adjusting slot terminal hole; *7*, locking slot.

THREAD RING GAGE BLANKS

17. The committee found universal accord as to the superiority of the adjustable thread ring gage over the solid type, with the result that all American Gage Design Standard thread ring gage blanks are equipped with an effective device for adjusting and locking the gage in the manufacturing or resizing processes. Of the many locking devices considered, the single-unit locking device was finally adopted as standard, as it permits a minimum diameter of blank for a given size range, and provides a simple adjustment and positive lock without introducing any mechanical stresses into the gage body, which might tend to create distortion after setting. Referring to figure 5, facing page 27, the construction and operation of this device is as follows:

18. The adjusting screw, *3*, is threaded externally and internally and split longitudinally. Turning this screw to the right exerts pressure on the sleeve, *2*, against the shoulder in the left-hand side of the gage here shown, thus spreading the ring. Once the ring has been properly adjusted by means of adjusting screw, *3*, the adjustment is locked by tightening locking screw, *1*. The tightening of locking screw, *1*, exerts a pull between the shoulder immediately under its head and the internal threads of the adjusting screw, *3*, which causes the adjusting screw to expand into the threads in the wall of the gage, the thrust of this action being taken up longitudinally by the sleeve, *2*. Therefore, the clamping is accomplished by expansion of the adjusting screw equally in all directions and not by the application of any eccentric forces that tend to distort the gage or upset the adjustment. The locking pressure, it is seen, is taken up centrally in the locking screw itself as the reacting support is directly under the head of the locking screw in the form of a shoulder in the gage. The sleeve, *2*, being accurately fitted, serves as a large dowel to maintain the alignment of the gage.

19. Dimensions for thread ring gage blanks in the range from No. 0 to 12¼ inches, inclusive, and of parts for the thread ring gage locking device, are given in tables 17, 18, 19, 20, 21, and 22, pages 30 to 35.

20. Five types of thread ring gage blanks for straight threads have been provided as illustrated in figure 6, page 28, namely:

(1) A thin flat disk type with one adjusting slot (two slots optional) for all diameters and pitches, both "go" and "not go," No. 0 to 5/16 inch, inclusive.

(2) A thin flat disk type with two adjusting slots for the following: (*a*) All diameters and pitches, "go" and "not go," above 5/16 to and including ½ inch; (*b*) fine pitches,[1] "go" and "not go," above ½ to and including 5½ inches; (*c*) coarse pitches, "not go" only, above ½ to and including 5½ inches.

(3) A thick flanged type with two adjusting slots for all "go" coarse pitch gages, above ½ to and including 5½ inches.

(4) A thin flat type provided with ball handles and with a plurality of adjusting slots for all fine pitch "go" gages and all "not go" gages in the range above 5.510 to and including 12.260 inches.

(5) A thick flanged type provided with ball handles and a plurality of adjusting slots for all coarse pitch "go" gages in the range 5.510 to and including 12.260 inches.

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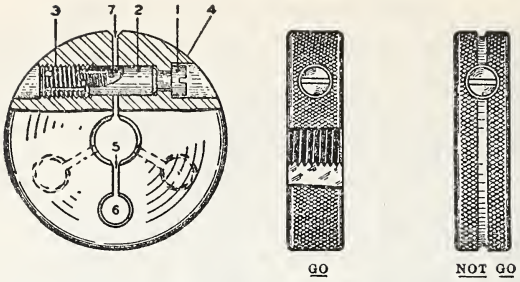
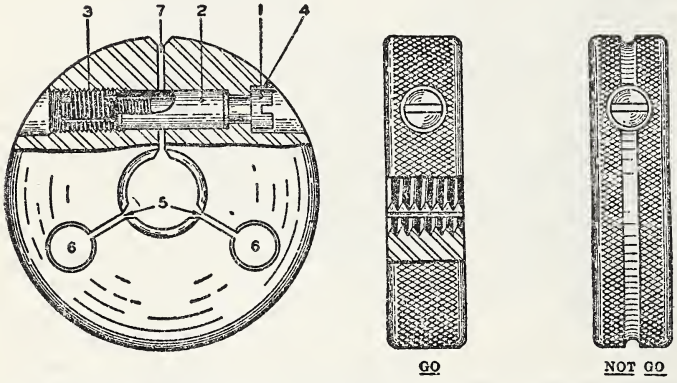
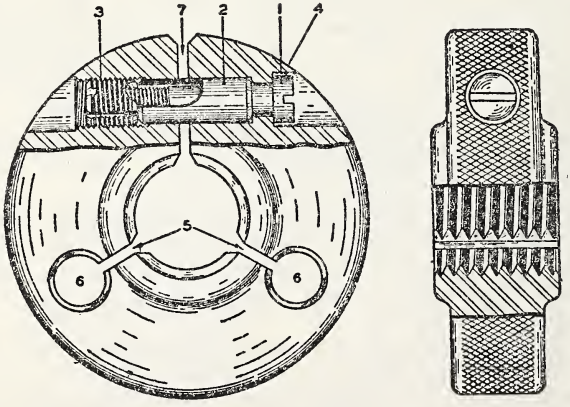
[1] Specific information as to the meaning of the terms "fine pitches" and "coarse pitches", as used above, is given in the footnote to table 17, p. 31.



Range: 0.060 inch to and including 0.150 inch, "go" and "not go" gages, all pitches. Two adjusting slots are optional with the gage manufacturer.



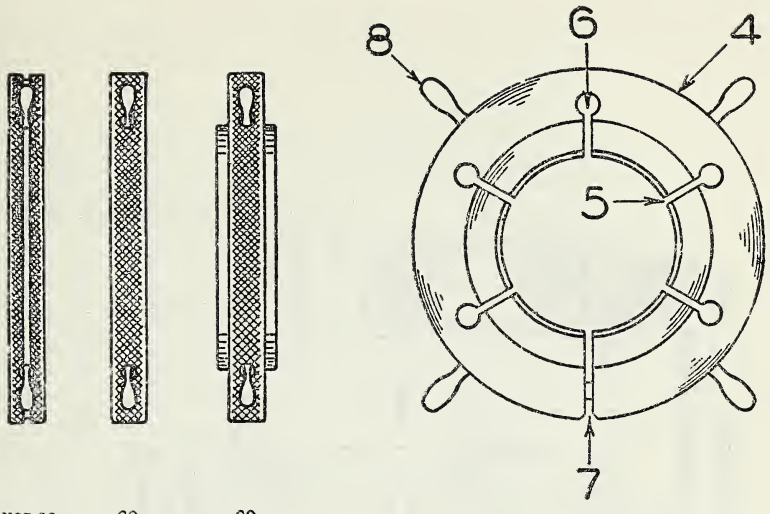
Range: Above 0.150 inch to and including 0.510 inch, "go" and "not go" gages, all pitches; 0.510 to and including 5.510 inches, "go" and "not go" gages, fine pitches; 0.510 to and including 5.510 inches, "not go" gages only, coarse pitches.



Range: 0.510 to and including 5.510 inches, "go" gages only, coarse pitches.

FIGURE 6.—*American Gage Design Standard thread ring gages, details of construction*— (Continued on page 29).

1. Locking screw.
2. Sleeve.
3. Adjusting screw.
4. Body.
5. Adjusting slot.
6. Adjusting slot terminal hole.
7. Locking slot.
8. Ball handle.



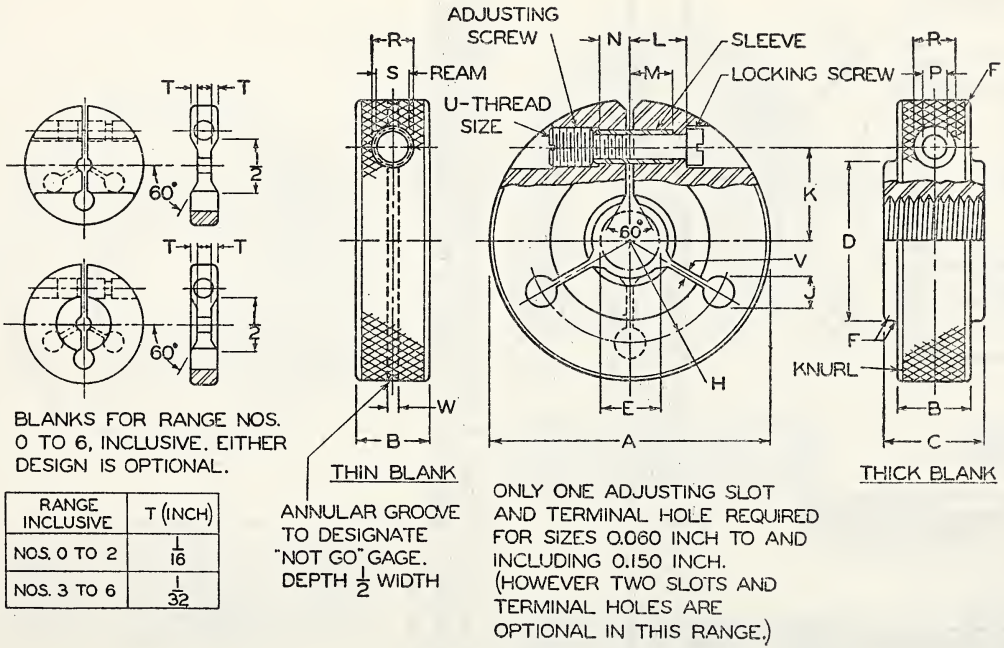
NOT GO GO GO
Range: 5.510 to and including 12.260 inches. Thick blank for coarse pitches, "go" gages. Thin blank for fine pitches, "go" gages, and all "not go" gages.

FIGURE 6.—*American Gage Design Standard thread ring gages, details of construction*—Concluded.

1. Locking screw.
2. Sleeve.
3. Adjusting screw.
4. Body.
5. Adjusting slot.
6. Adjusting slot terminal hole.
7. Locking slot.
8. Ball Handle.

21. For taper pipe threads a solid flanged type has been provided, as shown in table 22, page 35, for nominal pipe sizes from $\frac{1}{8}$ inch to 8 inches, inclusive.

TABLE 17.—*Thread ring gages, range No. 0 to 4¾ inches, inclusive*



RANGE INCLUSIVE	T (INCH)
NOS. 0 TO 2	1/16
NOS. 3 TO 6	1/32

Nominal range, inclusive	Decimal range, above and including—	General dimensions																			
		A	*B*	*C*	*D*	*E*	*F*	*H*	*J*	*K*	*L*	*M*	*N*	*P* Drill size	*R* Drill size	S Ream Min.	S Ream Max.	U Size	U Pitch diameter Min.	U Pitch diameter Max.	*V*	*W*
	Inches	*Inches*	*Inch*	*Inches*	*Inches*	*Inches*	*Inch*	*Inches*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*			*Inch*	*Inch*		*Inch*	*Inch*	*Inch*	*Inch*
Nos. 0 to 6 [1]	0.059 to .150	1	¼	------	------	------	1/32	5/16	5/32	5/16	7/32	5/32	1/16	No. 41 (0.0960)	1 1/64 (0.1719)	0.1370	0.1373	No. 8–36	0.1460	0.1478	0.010 [2]	1/32
Nos. 8 to 12	.150 to .240	1	¼	------	------	------	1/32	5/16	5/32	5/16	7/32	5/32	1/16	No. 41 (0.0960)	1 1/64 (0.1719)	.1370	.1373	No. 8–36	.1460	.1478	1/64	1/32
¼ to 5/16	.240 to .365	1 3/8	1 1/32	------	------	5/32	1/32	7/16	3/16	3/8	1 1/32	¼	1/8	No. 31 (0.1200)	7/32 (0.2187)	.1810	.1813	No. 12–28	.1928	.1950	1/32	1/16
3/8 to ½	.365 to .510	1 3/4	7/16	------	------	3/16	3/64	1 9/32	¼	1 5/32	½	3/8	3/16	No. 25 (0.1495)	17/64 (0.2656)	.2150	.2153	¼–28	.2268	.2290	1/32	3/32
9/16 to ¾	.510 to .825	2 3/16	9/16	¾	1 1/16	1 1/32	1/16	¾	5/16	1 1/16	1 7/32	1 3/32	7/32	No. 7 (0.2010)	2 1/64 (0.3281)	.2720	.2723	5/16–24	.2854	.2878	1/16	3/32
7/8 to 1 1/8	.825 to 1.135	2 5/8	1 1/16	1 5/16	1½	9/16	1/16	3 1/32	5/16	7/8	1 7/32	1 3/32	9/32	No. 1 (0.2280)	25/64 (0.3906)	.3340	.3344	3/8–24	.3479	.3503	1/16	3/32
1¼ to 1½	1.135 to 1.510	3 1/4	¾	1 1/8	1 7/8	2 7/32	1/16	1 3/16	3/8	1 1/8	5/8	7/16	5/16	17/64 (0.2656)	29/64 (0.4531)	.3890	.3894	7/16–20	.4050	.4076	1/16	3/32
1 5/8 to 2	1.510 to 2.010	3 3/4	1 3/16	1¼	2 3/8	1 3/16	3/32	1 7/16	3/8	1 3/8	5/8	7/16	5/16	17/64 (0.2656)	29/64 (0.4531)	.3890	.3894	7/16–20	.4050	.4076	1/16	1/8
2 1/8 to 2½	2.010 to 2.510	4½	7/8	1 5/16	2 7/8	1 1 9/32	3/32	1¾	7/16	1 11/16	1 3/16	9/16	7/16	21/64 (0.3281)	33/64 (0.5156)	.4510	.4515	½–20	.4675	.4701	3/32	1/8
2 5/8 to 3	2.510 to 3.010	5	7/8	1 3/8	3 3/8	2	3/32	2	7/16	1 15/16	1 3/16	9/16	7/16	21/64 (0.3281)	33/64 (0.5156)	.4510	.4515	½–20	.4675	.4701	3/32	1/8
3 1/8 to 3½	3.010 to 3.510	5½	1 5/16	1 7/16	3 7/8	2 7/16	3/32	2 7/32	7/16	2 3/16	1 3/16	9/16	7/16	21/64 (0.3281)	33/64 (0.5156)	.4510	.4515	½–20	.4675	.4701	3/32	1/8
3 5/8 to 4	3.510 to 4.010	6 3/8	1 5/16	1½	4 5/8	2 1 5/16	3/32	2 5/8	½	2 9/16	1	¾	5/8	13/32 (0.4062)	41/64 (0.6406)	.5710	.5715	5/8–18	.5889	.5919	3/32	1/8
4 1/8 to 4¾	4.010 to 4.760	7¼	1	1½	5 3/8	3 3/8	3/32	3 1/32	½	3	1	¾	5/8	13/32 (0.4062)	41/64 (0.6406)	.5710	.5715	5/8–18	.5889	.5919	3/32	1/8

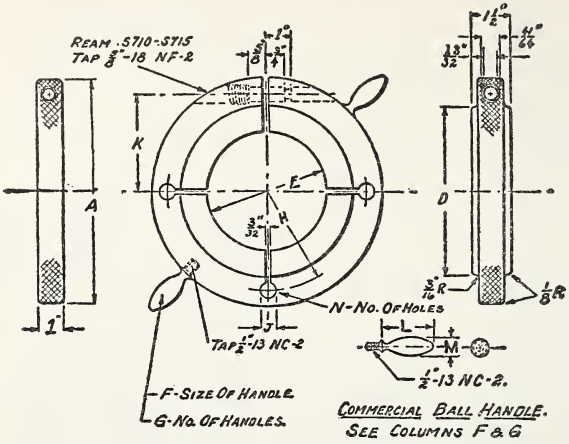
[1] Blanks for the range Nos. 0 to 6, inclusive, may be either counterbored or milled, as shown in illustration above.

[2] Approximate.

NOTE.—Thin gage blanks are to be used for all "not go" thread ring gages. For "go" thread ring gages, for all American National threads, use thin or thick blanks as follows:

Diameter	Thin blank	Thick blank
From No. 0 to ½ inch, inclusive.	All pitches	
Above ½ to 1⅛ inches, inclusive.	Pitches 12 threads per inch and finer except 9/16–12.	Pitches coarser than 12 months.
Above 1⅛ inches	Pitches 10 threads per inch and finer.	Pitches coarser than 10 threads per inch.

TABLE 18.—*Thread ring gages, range 4¾ to 12¼ inches, inclusive*



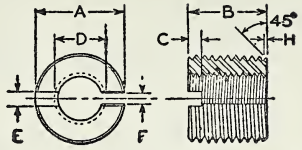
Nominal range, inclusive	Decimal range		A	D	E	F	G	H	J	K	N
	Above—	To and including—									
			Inches	*Inch, size*	*Inches*	*No.*		*Inches*	*Inch*	*Inches*	
4¾ to 5½	4. 760	5. 510	8¼	+ 1⅛	4			3 7/16	½	3½	2
5½ to 6¼	5. 510	6. 260	9¼	1⅛	4¾	6	2	3 15/16	½	3 15/16	2
6¼ to 7	6. 260	7. 010	10¼	1⅛	5½	6	2	4 7/16	½	4⅜	3
7 to 7¾	7. 010	7. 760	11¼	1⅛	6¼	6	2	4 13/16	⅝	5	3
7¾ to 8½	7. 760	8. 510	12¼	1⅛	7	6	2	5 5/16	⅝	5⅛	3
8½ to 9¼	8. 510	9. 260	13¼	1⅛	7¾	7	4	5 13/16	⅝	5⅝	5
9¼ to 10	9. 260	10. 010	14¼	1⅛	8½	7	4	6 7/32	11/16	6⅛	5
10 to 10¾	10. 010	10. 760	15¼	1⅛	9¼	7	4	6 23/32	11/16	6⅝	5
10¾ to 11½	10. 760	11. 510	16¼	1⅛	10	7	4	7¼	¾	7¼	5
11½ to 12¼	11. 510	12. 260	17¼	1⅛	10¾	7	4	7⅝	¾	7⅝	5

NOTE.—See note, table 17 (p. 31).

HANDLE DIMENSIONS

Handle No.	L	M
6	3⅜	1¼
7	3¾	1⅜

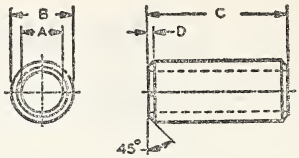
TABLE 19.—*Thread ring gage adjusting screws*



A					B[1]	C	D				E	F	H
Size (external thread)	Pitch diameter		Minor diameter				Size (internal thread)	Pitch diameter		Tap drill			
	Minimum	Maximum	Minimum	Maximum				Maximum	Minimum				
	Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*		*Inch*	*Inch*	*No.*	*Inch*	*Inch*	*Inch*
No. 8–36	0. 1442	0. 1460	0. 1315	0. 1333	3/16	3/64	No. 2–64	0. 0759	0. 0773	50 (0. 070)	1/32	1/64	0. 020
No. 12–28	. 1906	. 1928	. 1744	. 1766	1/4	3/64	No. 4–48	. 0985	. 1001	42 (. 093)	1/32	1/64	. 020
1/4–28	. 2246	. 2268	. 2084	. 2106	5/16	1/16	No. 6–40	. 1218	. 1235	32 (. 116)	3/64	1/32	. 020
5/16–24	. 2830	. 2854	. 2641	. 2665	5/16	1/16	No. 10–32	. 1697	. 1716	20 (. 161)	3/64	1/32	1/32
3/8–24	. 3455	. 3479	. 3266	. 3290	3/8	5/64	No. 12–28	. 1928	. 1950	14 (. 182)	1/16	3/64	1/32
7/16–20	. 4024	. 4050	. 3797	. 3823	7/16	5/64	1/4–28	. 2268	. 2290	3 (. 213)	1/16	3/64	1/32
1/2–20	. 4649	. 4675	. 4422	. 4448	1/2	3/32	5/16–24	. 2854	. 2878	I (. 272)	5/64	1/16	3/64
5/8–18	. 5859	. 5889	. 5607	. 5637	9/16	3/32	3/8–24	. 3479	. 3503	Q (. 332)	5/64	1/16	3/64

[1] Tolerance on length $B = \pm 1/64$ inch.

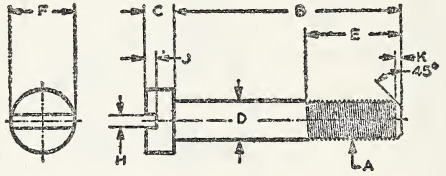
TABLE 20.—*Thread ring gage sleeves*



A	*B*		*C*[1]	*D*
	Minimum	Maximum		
	Inch	*Inch*	*Inches*	*Inch*
No. 43 (0.089)	0. 1368	0. 1370	1/4	0. 010
No. 32 (0.116)	. 1808	. 1810	7/16	. 020
No. 27 (0.144)	. 2148	. 2150	5/8	. 020
No. 10 (0.193)	. 2718	. 2720	13/16	1/32
No. 2 (0.221)	. 3337	. 3340	3/4	1/32
F (0.257)	. 3887	. 3890	13/16	1/32
P (0.323)	. 4507	. 4510	1 1/16	3/64
25/64 (0.391)	. 5707	. 5710	1 1/2	3/64

[1] Tolerance on length $C = \pm 1/64$ inch.

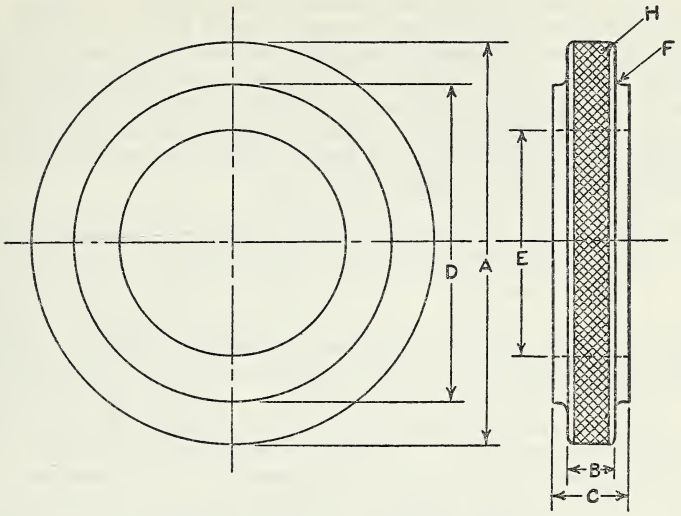
TABLE 21.—*Thread ring gage locking screws*



A			*B*[1]	*C*	*D*		*E*	*F*	*H*	*J*	*K*
Size	Pitch diameter				Min.	Max.					
	Min.	Max.									
	Inch	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
No. 2–64	0. 0745	0. 0759	29/64	5/64	0. 0840	0. 0860	3/16	5/32	1/32	3/64	0. 010
No. 4–48	. 0969	. 0985	23/32	3/32	. 1100	. 1120	5/16	7/16	1/32	3/64	. 020
No. 6–40	. 1201	. 1218	1	1/8	. 1360	. 1380	7/16	7/32	3/64	1/16	. 020
No. 10–32	. 1678	. 1697	1 1/16	1/8	. 1880	. 1900	7/16	9/32	3/64	1/16	1/32
No. 12–28	. 1906	. 1928	1 3/16	5/32	. 2140	. 2160	1/2	11/32	1/16	1/16	1/32
1/4–28	. 2246	. 2268	1 23/64	3/16	. 2480	. 2500	9/16	13/32	1/16	5/64	1/32
5/16–24	. 2830	. 2854	1 23/32	1/4	. 3105	. 3125	5/8	15/32	5/64	3/32	3/64
3/8–24	. 3455	. 3479	2 3/16	5/16	. 3730	. 3750	3/4	19/32	5/64	3/32	3/64

[1] Tolerance on length $B = \pm 1/32$ inch.

TABLE 22.—*Taper pipe thread ring gages, range ⅛ to 8 inches, inclusive*



Nominal pipe size	A	B	C	D	E	F	H
In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
⅛	1 1/8	⅛	¼	11/16	9/32	1/32	1/32
¼	1 5/16	9/64	9/32	27/32	⅜	1/32	1/32
⅜	1½	9/64	11/32	1	½	1/32	1/32
½	1 11/16	3/16	27/64	1 3/16	5/8	3/64	1/32
¾	1 15/16	13/64	7/16	1 7/16	13/16	3/64	1/32
1	2 5/16	17/64	½	1 11/16	1	3/64	1/32
1¼	2¾	9/32	33/64	2 1/16	1¼	3/64	3/64
1½	3 1/16	9/32	33/64	2¼	1½	3/64	3/64
2	3⅝	19/64	17/32	2¾	2	1/16	3/64
2½	4¼	½	13/16	3⅜	2⅜	3/32	1/16
3	5	9/16	29/32	4	3 1/16	3/32	1/16
3½	5⅝	⅝	61/64	4 9/16	3 9/16	3/32	1/16
4	6¼	⅝	1	5 1/16	4 1/16	3/32	1/16
4½	7	21/32	1	5⅝	4 9/16	3/32	1/16
5	7⅝	23/32	1 1/16	6 3/16	5⅛	3/32	3/32
6	8⅞	23/32	1 3/32	7 5/16	6 3/16	3/32	3/32
8	11½	13/16	1 3/16	9½	8⅛	⅛	3/32

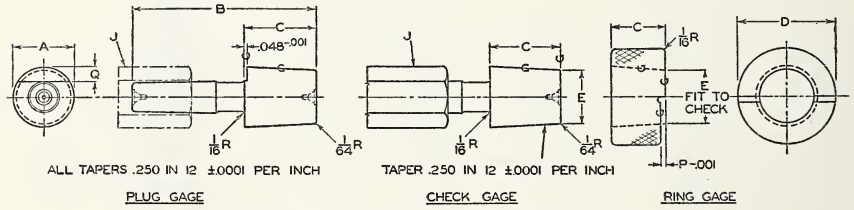
TAPER PLUG AND RING GAGES FOR CHECKING TAPER LOCK HANDLES AND GAGING MEMBERS

22. It has been deemed advisable to formulate specifications for a complete set of finished gages for inspecting the taper shanks and handles of gages of taper lock design.

23. A complete set consists of a taper plug, a taper ring, and a taper check plug for each size range. General details of construction will be apparent from table 23, page 36.

24. The taper limits established by the American Gage Design Committee for taper lock handles and shanks may be readily maintained by the use of the gages shown in table 23, in which the taper plug gage is of the single-end limit type, with a ground step representing the minimum size of hole. Equally satisfactory results may be secured by using a single-end taper plug gage, on which a scribed line represents the minimum size of hole and the shoulder of the gage represents the maximum size of hole. Both designs are sanctioned by the American Gage Design Committee.

TABLE 23.—*Plug and ring gages for checking handles and gaging members of taper lock plug gages, range above 0.059 to and including 1.510 inches*



PLUG GAGES FOR CHECKING HANDLES

Size No. of handle to be gaged	*A* +0.0000 −0.0001	*B*	*C*	*J* Handle size No.	*Q*
	Inch	*Inches*	*Inch*		*Inch*
000	0. 126	1 3/8	1/2	000	0. 015
00	. 156	1 17/32	9/16	00	. 015
0	. 181	1 17/32	5/8	0	. 020
1	. 240	2	3/4	1	. 025
2	. 310	2	3/4	2	. 025
3	. 410	2	3/4	3	. 050
4	. 610	2 3/16	7/8	4	. 100
5	. 810	2 5/16	1	5	. 200

RING GAGES FOR CHECKING GAGING MEMBERS, AND CHECK GAGES

Size No. of shank to be gaged	*E* −0.0000 +0.0001	*C*	*D*	*J* Handle size No.	*P* +0.000 −0.001
	Inch	*Inches*	*Inches*		*Inch*
000	0. 1146	9/16	1	000	0. 0480
00	. 1433	5/8	1	00	. 0480
0	. 1670	11/16	1 1/8	0	. 0480
1	. 2234	13/16	1 1/8	1	. 0480
2	. 2934	13/16	1 1/4	2	. 0480
3	. 3924	7/8	1 3/8	3	. 0960
4	. 5898	1	1 9/16	4	. 0960
5	. 7872	1 1/8	1 3/4	5	. 0960

NOTE.—Dimensions not specified above shall conform to American Gage Design Standards, tables 1, 2, 3, and 4, pp. 8 to 12.

PLAIN ADJUSTABLE SNAP GAGES

25. A large number of adjustable snap gage designs have been developed by various firms, both in this country and abroad, and although in general construction and appearance the gages are very similar, they differ so much in detail that there has been no possibility of obtaining interchangeability of parts among them.

26. In response to insistent demand, the committee has undertaken the development of an adjustable snap gage which would embody the most desirable features of the gages now manufactured and thus enable the gage maker to produce gages which would conform to a common standard.

27. Four styles of adjustable snap gages have been provided as illustrated in figure 7, page 38, namely:

Model A: Employing four gaging pins.

Model B: Employing four gaging buttons, either square or round.

Model C: Employing two gaging buttons, either square or round, and single block anvil.

Model MC: A miniature snap gage with two gaging buttons, either square or round, and a single block anvil.

28. The frames of models A, B, and C have been so designed that common patterns can be used for all three. Frames are of the conventional C or semicircular type, of cast iron with solid web. Particular attention was given to weight, which approximates the average of existing proprietary designs.

29. The straight gaging pins are of circular cross section, an arcuate bevel being provided at the front edge where they first engage the work. The flanged gaging buttons are provided with either square or circular heads, the former being chamfered on their forward edges, and the latter being provided with an arcuate bevel where they first engage the work. The gap between "go" and "not go" has been kept to a minimum.

30. A locking device was adopted which has stood the test of time—the three-piece type with two flats on the shank of the gaging button or pin, and a locking nut and locking bushing, each provided with a bevel flat.

31. In the development of these gages, exceptional care was taken at every turn to insure that they should embody all of the best features of snap gage design, and the design adopted incorporates:

(1) A design of frame which has proved to be exceptionally rigid under severe tests.

(2) Reduction of weight to as low a point as strength of materials permits.

(3) Distribution of metal to assure a nice balance and feel.

(4) An effective and proved locking device.

(5) Suitable construction of gaging pins, buttons, and anvils to give ample rigidity and maintain accuracy.

(6) Ease and simplicity of adjustment.

(7) Provision for sealing.

(8) Careful selection of limits and tolerances to preserve accuracy and permit interchangeability.

32. General details of construction are shown in figure 7, page 38, and dimensions are given in tables 24 to 34, inclusive, pages 39 to 44, and figure 8, page 45.

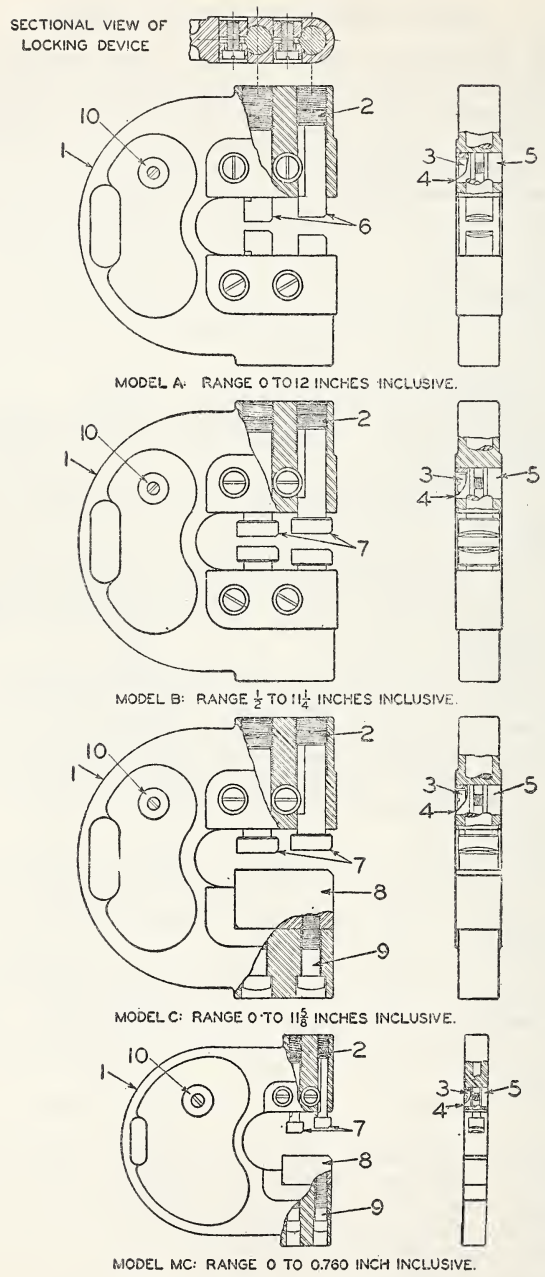
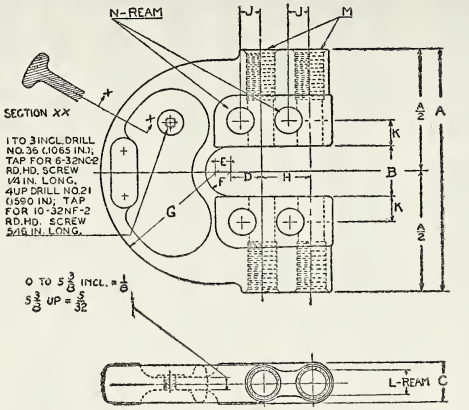


FIGURE 7.—*American Gage Design Standard adjustable snap gages, details of construction.*

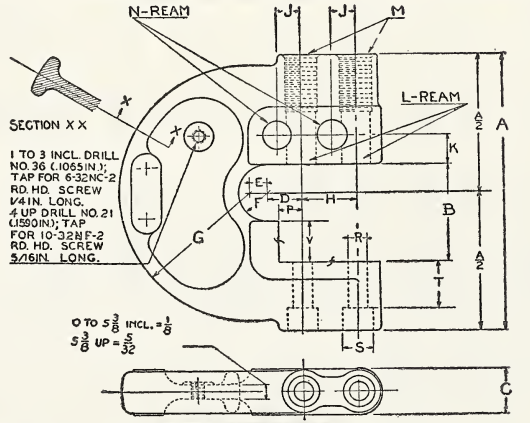
1. Frame.
2. Adjusting screw.
3. Locking screw.
4. Locking bushing.
5. Locking nut.
6. Gaging pin.
7. Gaging button (square or round head).
8. Anvil.
9. Anvil screw.
10. Marking disk.

TABLE 24.—*Plain adjustable snap gages, models A and B, details of frame*



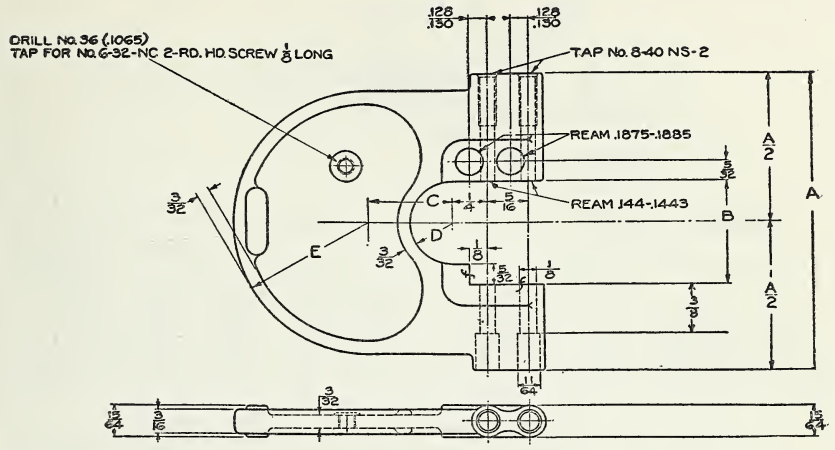
Range, style A		Range, style B		Frame No.	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*		*K*	*L*		*M*	*N*	
Above—	To and including	Above—	To and including										Maximum	Minimum		Maximum	Minimum		Maximum	Minimum
Inches	*Inches*	*Inches*	*Inches*		*Inches*	*Inches*	*Inch*	*Inch*	*Inches*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*		*Inch*	*Inch*
0	½			1	3	5/8	31/64	3/8	3/16	5/16	1 3/8	1 9/32	0.258	0.256	5/16	0.3128	0.3125	0.3325–40NS-2	0.3135	0.3125
½	1			2	3½	1 1/8	31/64	3/8	5/16	9/16	1 5/8	1 9/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125
1	1½	½	1	3	4	1 5/8	31/64	3/8	7/16	13/16	1 7/8	1 9/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125
1½	2	1	1½	4	4½	2 1/8	31/64	3/8	9/16	1 1/16	2 1/8	1 9/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125
2	2½	1½	2	5	5	2 5/8	31/64	3/8	11/16	1 5/16	2 3/8	1 9/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125
2½	3	2	2½	6	5½	3 1/8	31/64	3/8	13/16	1 9/16	2 5/8	1 9/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125
3	3¾	2½	3⅛	7	6 7/8	3 15/16	39/64	7/16	7/8	1 31/32	3 5/16	2 3/32	.311	.309	3/8	.3753	.3750	.395–40NS-2	.376	.375
3¾	4½	3⅛	3⅞	8	7 5/8	4 1 1/16	39/64	7/16	1	2 1 1/32	3 1 1/16	2 3/32	.311	.309	3/8	.3753	.3750	.395–40NS-2	.376	.375
4½	5¼	3⅞	4⅝	9	8 3/8	5 7/16	39/64	7/16	1 1/8	2 2 3/32	4 1/16	2 3/32	.311	.309	3/8	.3753	.3750	.395–40NS-2	.376	.375
5¼	6	4⅝	5⅜	10	9 1/8	6 3/16	39/64	7/16	1¼	3 3/32	4 7/16	2 3/32	.311	.309	3/8	.3753	.3750	.395–40NS-2	.376	.375
6	7	5⅜	6¼	11	10¾	7¼	47/64	½	1 3/8	3 5/8	5¼	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375
7	8	6¼	7¼	12	11¾	8¼	47/64	½	1½	4 1/8	5¾	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375
8	9	7¼	8¼	13	12¾	9¼	47/64	½	1 5/8	4 5/8	6¼	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375
9	10	8¼	9¼	14	13¾	10¼	47/64	½	1¾	5 1/8	6¾	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375
10	11	9¼	10¼	15	14¾	11¼	47/64	½	1 7/8	5 5/8	7¼	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375
11	12	10¼	11¼	16	15¾	12¼	47/64	½	2	6 1/8	7¾	2 7/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375

TABLE 25.—*Plain adjustable snap gages, model C, details of frame*



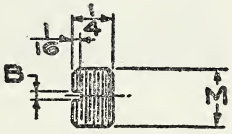
Range, style C		Frame No.	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*		*K*	*L*		*M*	*N*		*R*		*S*	*T*	*P*	*V*
Above—	To and including										Max.	Min.		Max.	Min.		Max.	Min.	Max.	Min.				
Inches	*Inches*		*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*I4.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*		*In.*	*In.*	*In.*	*In.*	*Id.*	*In.*	*In.*	*In.*
0	1/4	1	3	1 1/16	31/64	3/8	3/16	5/16	1 3/8	19/32	0.258	0.256	5/16	0.3128	0.3125	0.3325–40NS-2	0.3135	0.3125	0.1927	0.1900	5/16	1/2	1/4	7/16
1/4	3/4	2	3 1/2	1 9/16	31/64	3/8	5/16	9/16	1 5/8	19/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125	.1927	.1900	5/16	1/2	1/4	7/16
3/4	1 1/4	3	4	2 1/16	31/64	3/8	7/16	13/16	1 7/8	19/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125	.1927	.1900	5/16	1/2	1/4	7/16
1 1/4	1 3/4	4	4 1/2	2 9/16	31/64	3/8	9/16	1 1/16	2 1/8	19/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125	.1927	.1900	5/16	1/2	1/4	7/16
1 3/4	2 1/4	5	5	3 1/16	31/64	3/8	11/16	1 5/16	2 3/8	19/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125	.1927	.1900	5/16	1/2	1/4	7/16
2 1/4	2 3/4	6	5 1/2	3 9/16	31/64	3/8	13/16	1 9/16	2 5/8	19/32	.258	.256	5/16	.3128	.3125	.3325–40NS-2	.3135	.3125	.1927	.1900	5/16	1/2	1/4	7/16
2 3/4	3 7/16	7	6 7/8	4 13/32	39/64	7/16	7/8	1 31/32	3 5/16	23/32	.311	.309	3/8	.3753	.375	.3950–40NS-2	.3760	.3750	.2531	.2500	3/8	2 1/32	5/16	15/32
3 7/16	4 3/16	8	7 5/8	5 5/32	39/64	7/16	1	2 1 1/32	3 23/32	23/32	.311	.309	3/8	.3753	.375	.3950–40NS-2	.3760	.3750	.2531	.2500	3/8	2 1/32	5/16	15/32
4 3/16	4 15/16	9	8 3/8	5 29/32	39/64	7/16	1 1/8	2 23/32	4 3/32	23/32	.311	.309	3/8	.3753	.375	.3950–40NS-2	.3760	.3750	.2531	.2500	3/8	2 1/32	5/16	15/32
4 15/16	5 1 1/16	10	9 1/8	6 2 1/32	39/64	7/16	1 1/4	3 3/32	4 7/16	23/32	.311	.309	3/8	.3753	.375	.3950–40NS-2	.3760	.3750	.2531	.2500	3/8	2 1/32	5/16	15/32
5 1 1/16	6 5/8	11	10 3/4	7 3/4	47/64	1/2	1 3/8	3 5/8	5 1/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2
6 5/8	7 5/8	12	11 3/4	8 3/4	47/64	1/2	1 1/2	4 1/8	5 3/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2
7 5/8	8 5/8	13	12 3/4	9 3/4	47/64	1/2	1 5/8	4 5/8	6 1/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2
8 5/8	9 5/8	14	13 3/4	10 3/4	47/64	1/2	1 3/4	5 1/8	6 3/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2
9 5/8	10 5/8	15	14 3/4	11 3/4	47/64	1/2	1 7/8	5 5/8	7 1/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2
10 5/8	11 5/8	16	15 3/4	12 3/4	47/64	1/2	2	6 1/8	7 3/4	27/32	.365	.363	7/16	.4378	.4375	.4575–40NS-2	.4385	.4375	.3158	.3125	7/16	1 3/16	3/8	1/2

TABLE 26.—*Plain adjustable snap gages, model MC, details of frame*



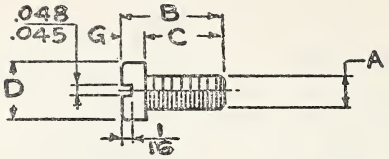
Range		Frame No.	*A*	*B*	*C*	*D*	*E*
Above—	To and including—						
Inch	*Inch*		*Inches*	*Inches*	*Inch*	*Inch*	*Inches*
0	0. 385	00	2 1/4	25/32	5/8	5/16	1
0. 386	. 760	0	2 5/8	1 5/32	3/4	1/2	1 3/16

TABLE 27.—*Models A, B, and C snap gage adjusting screws*



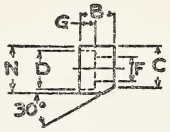
Frame Nos., inclusive	*B*		*M*
	Max.	Min.	
	Inch	*Inch*	
1 to 6	0. 048	0. 045	0. 3325–40NS–3
7 to 10	. 048	. 045	. 3950–40NS–3
11 to 16	. 048	. 045	. 4575–40NS–3

TABLE 28.—*Models A, B, and C snap gage locking screws*

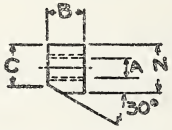


Frame Nos., inclusive	A	B	C	D		G
				Max.	Min.	
		Inch	*Inch*	*Inch*	*Inch*	*Inch*
1 to 6	8–36NF–2	7/16	11/32	0. 252	0. 248	3/32
7 to 10	10–32NF–2	17/32	27/64	. 315	. 310	7/64
11 to 16	12–28NF–2	21/32	17/32	. 346	. 341	1/8

TABLE 29.—*Models A, B, and C snap gage locking bushings*



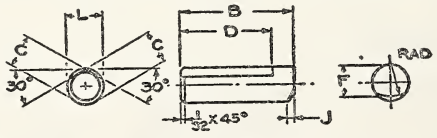
LOCKING BUSHING



LOCKING NUT

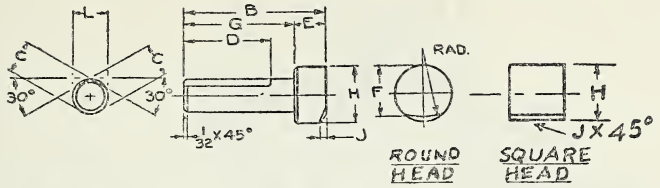
Frame Nos., inclusive	A	B	C		D		F	G	N	
			Max.	Min.	Max.	Min.			Max.	Min.
		Inch	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
1 to 6	8–36NF–2	11/64	0. 276	0. 271	0. 260	0. 255	11/64	3/32	0. 3125	0. 3105
7 to 10	10–32NF–2	15/64	. 333	. 328	. 323	. 318	13/64	7/64	. 3750	. 3730
11 to 16	12–28NF–2	19/64	. 385	. 380	. 355	. 350	15/64	1/8	. 4375	. 4355

TABLE 30.—*Model A snap gage gaging pins*



Frame Nos., inclusive	B	C		D	F	J	L	
		Max.	Min.				Max.	Min.
	Inches	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*
1 to 6	15/16	0. 300	0. 298	13/16	17/64	3/64	0. 3125	0. 3123
7 to 10	1 17/32	. 358	. 356	1 1/32	21/64	3/64	. 375	. 3748
11 to 16	1 1/2	. 417	. 415	1 1/4	3/8	1/16	. 4375	. 4373

TABLE 31.—*Models B and C snap gage gaging buttons*

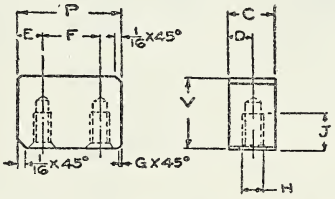


Frame Nos., inclusive	B	C		D	E	F	G	H		J	L	
		Max.	Min.					Max.	Min.		Max.	Min.
	Ins.	*Inch*	*Inch*	*Ins.*	*In.*	*In.*	*Ins.*	*Inch*	*Inch*	*In.*	*Inch*	*Inch*
1 to 6[1]	1 3/16	0. 300	0. 298	15/16	1/4	7/16	15/16	0. 505	0. 500	3/64	0. 3125	0. 3123
7 to 10	1 17/32	. 358	. 356	1 1/32	5/16	9/16	1 1/32	. 630	. 625	3/64	. 375	. 3748
11 to 16	1 7/8	. 417	. 415	1 1/4	3/8	5/8	1 1/2	. 755	. 750	1/16	. 4375	. 4373

[1] Modification of gaging button to permit assembly in model C, frame No. 1, range No. 0 to ¼ inch:

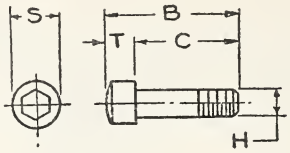
NOTE.—Square-head gaging buttons are optional.

TABLE 32.—*Model C snap gage anvils*



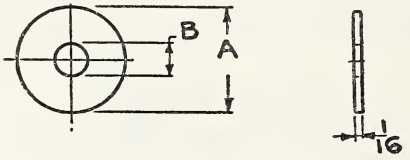
Frame Nos., inclusive	C		D		E	F	G	H	J	P	V
	Max.	Min.	Max.	Min.							
	Inch	*Inch*	*Inch*	*Inch*	*In.*	*In.*	*In.*		*In.*	*Inches*	*Ins.*
1 to 6	0. 505	0. 500	0. 2525	0. 250	1/4	1 9/32	1/64	10-32NF-2	5/16	1 3/32	1/2
	. 505	. 500	. 2525	. 250	1/4	1 9/32	1/64	10-32NF-2	5/16	1 3/32	3/4
7 to 10	. 630	. 625	. 3150	. 3125	5/16	23/32	1/32	1/4-28NF-2	11/32	1 11/32	9/16
	. 630	. 625	. 3150	. 3125	5/16	23/32	1/32	1/4-28NF-2	11/32	1 11/32	15/16
11 to 16	. 755	. 750	. 3775	. 375	3/8	27/32	1/32	5/16-24NF-2	3/8	1 19/32	5/8
	. 755	. 750	. 3775	. 375	3/8	27/32	1/32	5/16-24NF-2	3/8	1 19/32	1 1/8

TABLE 33.—*Model C snap gage anvil screws*

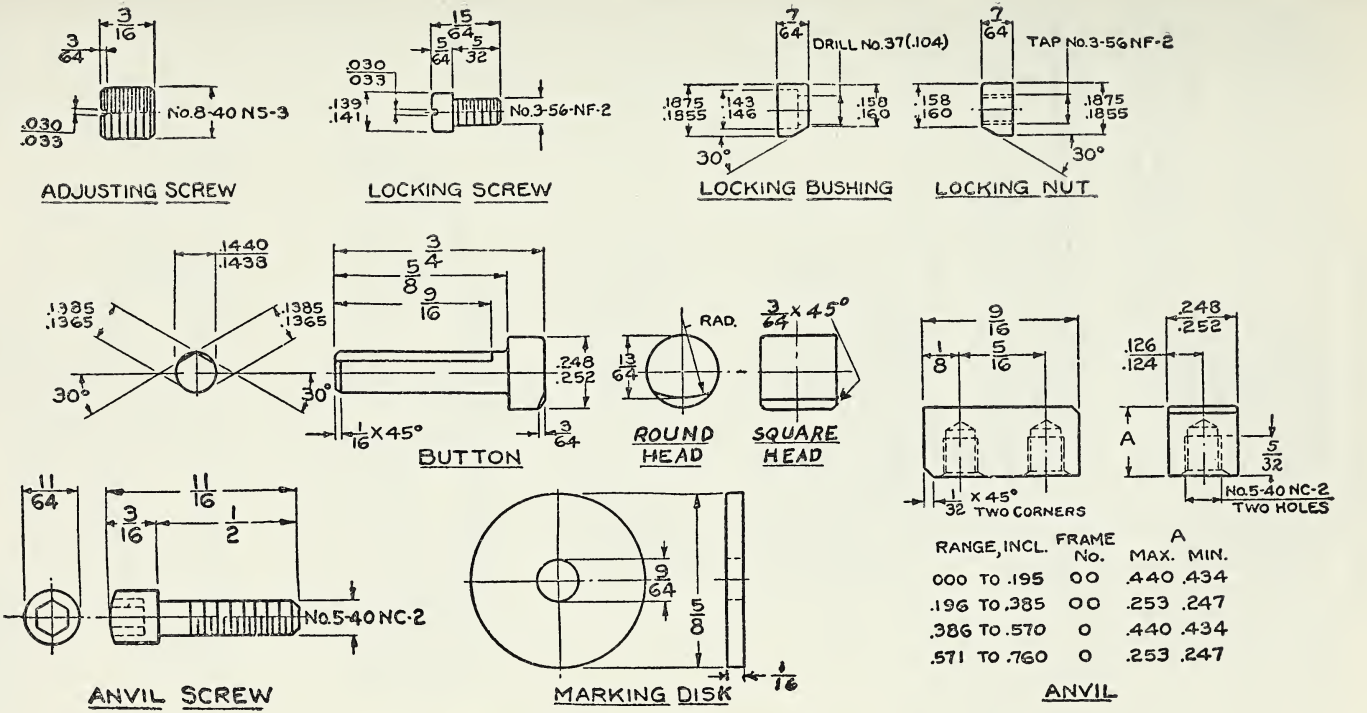


Frame Nos., inclusive	*B*	*C*	*H*	*S*	*T*
	Inches	*Inches*		*Inch*	*Inch*
1 to 6	15/16	3/4	10-32NF-2	5/16	13/64
7 to 10	1 3/16	15/16	1/4-28NF-2	3/8	1/4
11 to 16	1 1/16	1 1/8	5/16-24NF-2	7/16	5/16

TABLE 34.—*Models A, B, C, and MC snap gage marking disks*



Frame Nos., inclusive	*A*	*B*
	Inch	*Inch*
00, 0, and 1	5/8	9/64
2 and 3	7/8	9/64
4 to 16	1	13/64



RANGE, INCL.	FRAME No.	A MAX.	A MIN.
000 TO .195	00	.440	.434
.196 TO .385	00	.253	.247
.386 TO .570	0	.440	.434
.571 TO .760	0	.253	.247

FIGURE 8.—*Model MC snap gage, details.*

ADJUSTABLE LENGTH GAGES

33. As a corollary to the development of the adjustable snap gage, the committee felt that it would be a valuable contribution to gaging practice to develop an adjustable length gage in which the ease of setting and facility in handling which are characteristic of the snap gage could be applied to length measurement.

34. The American Gage Design Standard adjustable length gage employs for gaging members and adjusting and locking means, the same fittings which are utilized in adjustable snap gages, as detailed in table 35, page 51.

35. The gage heads are designed in three styles: (*a*) The progressive model with two pairs of gaging members on the same side of the spacing bar, (*b*) and (*c*) two double-sided models with "go" and "not go" gaging members on opposite sides of the spacing bar. All models may be used to cover a very wide range, as the spacing bar may be constructed in any length desired.

36. General details of construction and dimensions are shown in figures 9, 10, 11, 12, and 13, pages 47 to 50.

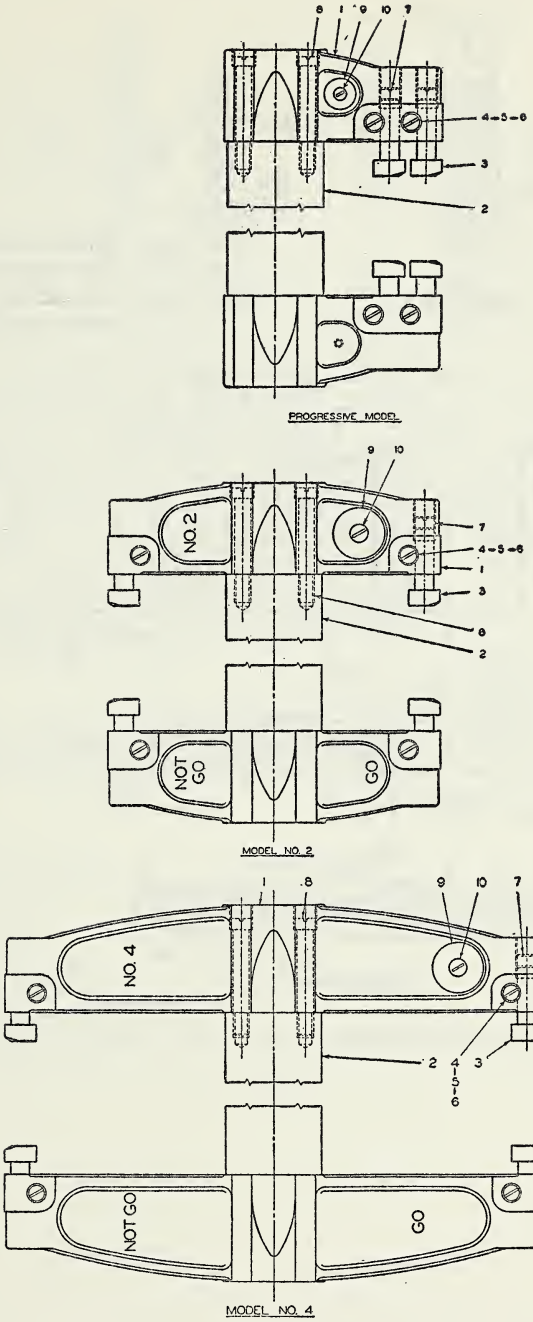


FIGURE 9.—*American Gage Design Standard adjustable length gages, details of construction.*

1. Gage head.
2. Spacing bar.
3. Gaging button.
4. Locking screw.
5. Locking nut.
6. Locking bushing.
7. Adjusting screw.
8. Gage head screw.
9. Marking disk.
10. Marking disk screw.

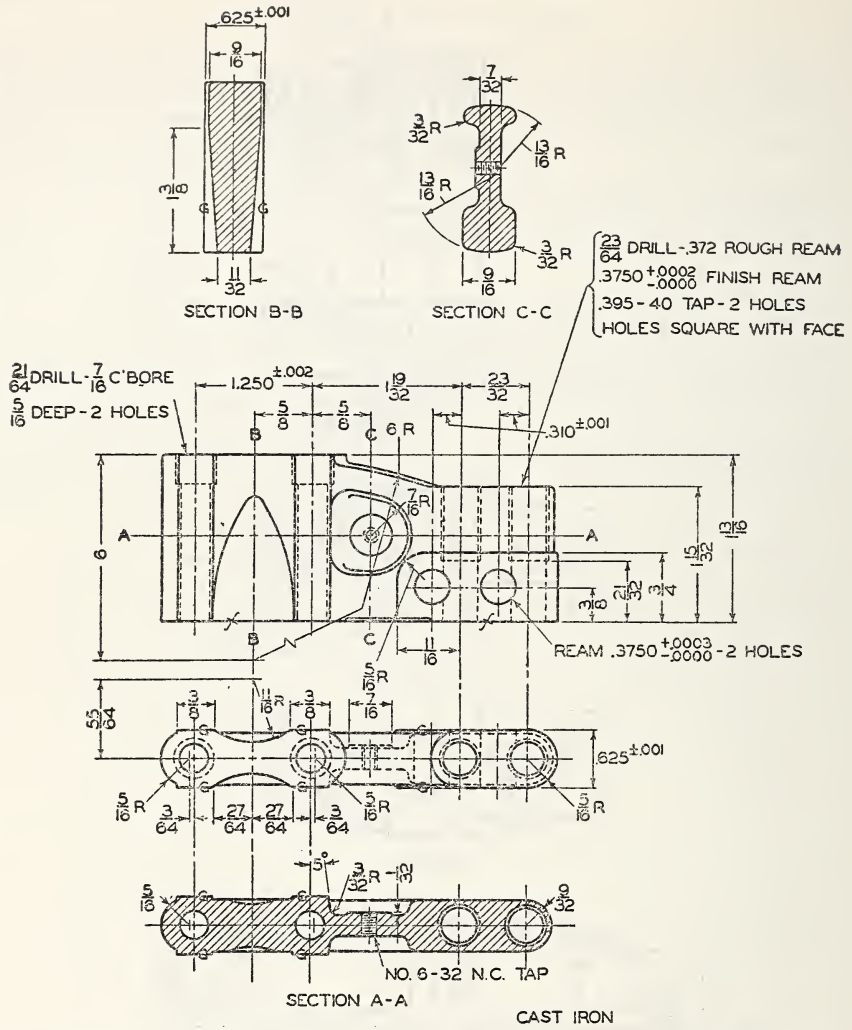


FIGURE 10.—*Adjustable length gage, detail of length gage head, progressive model.*

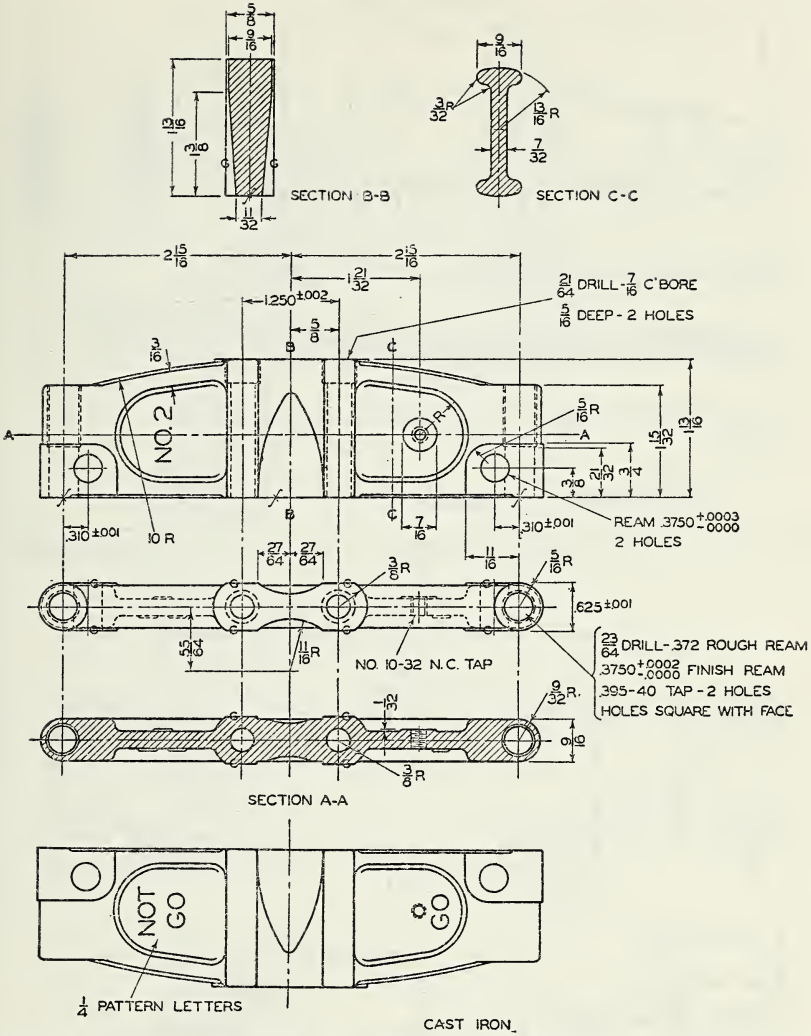


FIGURE 11.—*Adjustable length gage, detail of length gage head, double-sided model No. 2.*

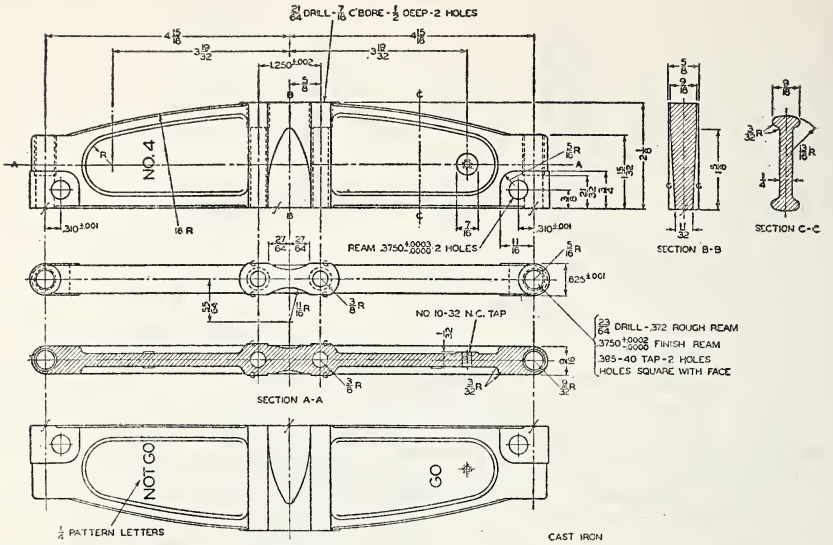
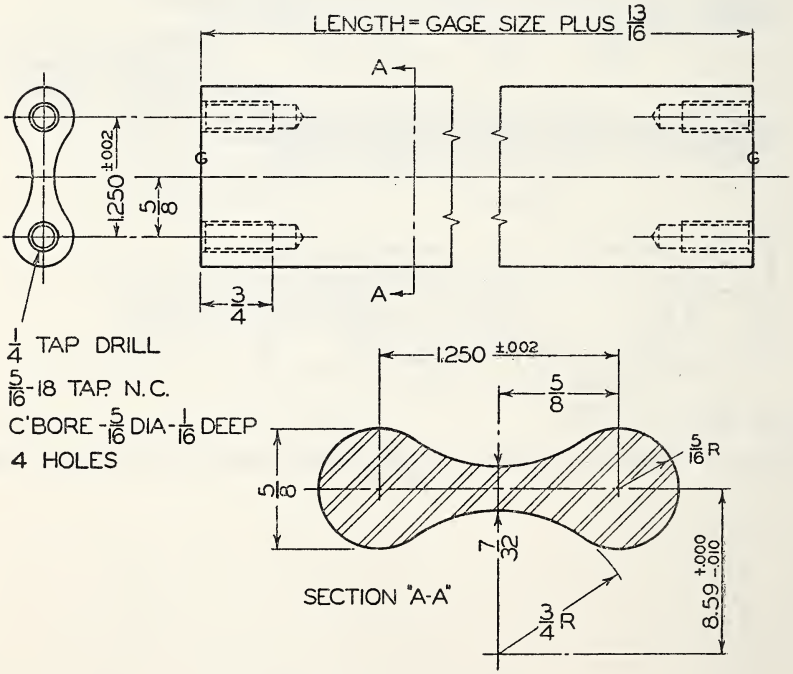


FIGURE 12.—*Adjustable length gage, detail of length gage head, double-sided model No. 4.*



COLD DRAWN MACHINE STEEL

FIGURE 13.—*Adjustable length gage, detail of length gage spacing bar.*

TABLE 35.—*Adjustable length gages, parts list*

Part		Progressive		Model No. 2		Model No. 4	
Number	Name	Specification	Reference	Specification	Reference	Specification	Reference
1	Gage head		Fig. 10		Fig. 11		Fig. 12.
2	Spacing bar		Fig. 13		Fig. 13		Fig. 13.
3	Gaging button	5/8×1 7/16	Table 31, frames 7–10	5/8×1 7/16	Table 31, frames 7–10	5/8×1 7/16	Table 31, frames 7–10.
4	Locking screw	No. 10–32×2 7/64	Table 28, frames 7–10	No. 10–32×2 7/64	Table 28, frames 7–10	No. 10–32×2 7/64	Table 28, frames 7–10.
5	Locking nut	3/8×1 5/64	Table 29, frames 7–10	3/8×1 5/64	Table 29, frames 7–10	3/8×1 5/64	Table 29, frames 7–10.
6	Locking bushing	3/8×1 5/64	Table 29, frames 7–10	3/8×1 5/64	Table 29, frames 7–10	3/8×1 5/64	Table 29, frames 7–10.
7	Adjusting screw	0.395–40×1/4	Table 27, frames 7–10	0.395–40×1/4	Table 27, frames 7–10	0.395–40×1/4	Table 27, frames 7–10.
8	Gage head screw	5/16–18 ×2		5/16–18×2		5/16–18×2	
9	Marking disk	5/8×1/16	Table 34, frames 00, 0, 1	1×1/16	Table 34, frames 4–16	1×1/16	Table 34, frames 4–16.
10	Marking disk screw	No. 6–32×1/4		No. 10–32×1/4		No. 10–32×1/4	

TWIN RING GAGE BLANKS—COMBINATION RING AND SNAP GAGE BLANKS

37. A type of gage which has enjoyed widespread use and acceptance, particularly in United States Government arsenals, is shown in figure 14, below. This gage was deemed sufficiently convenient for the rapid inspection of certain types of small precision parts to warrant its adoption by the committee as an American Gage Design Standard in the range 0.059 to 1.135 inches, inclusive.

38. As will be apparent from reference to figure 14, this gage consists of a flat blank or gage body of unhardened steel bored out to accommodate "go" and "not go" ring gage bushings of hardened tool steel. In this form, the gage body is a conventional twin ring gage holder. However, if desired, the blank holder can be readily milled out in manufacture at the "not go" end to transform it into an effective combination ring and solid snap gage. The jaws or anvils in this case are hardened, ground, and lapped to size.

39. General details of construction are shown in table 36, page 53.

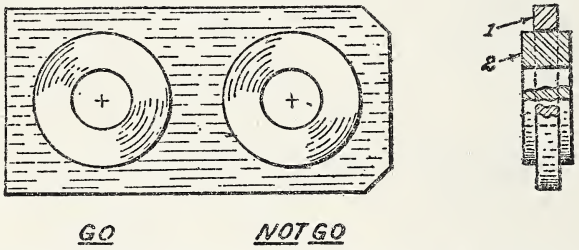
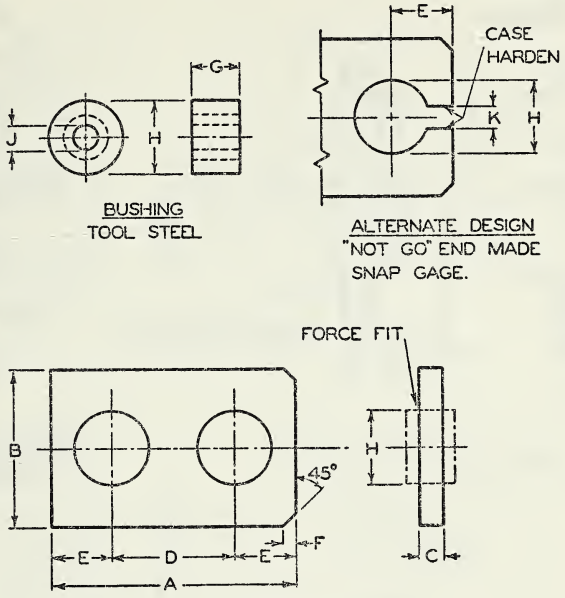


FIGURE 14.—*American Gage Design Standard twin ring gage, details of construction.*

1. Body. 2. Bushing.

TABLE 36.—*Twin ring gage blanks, combination ring and snap gage blanks, details of construction, range 0.059 to and including 1.135 inches*



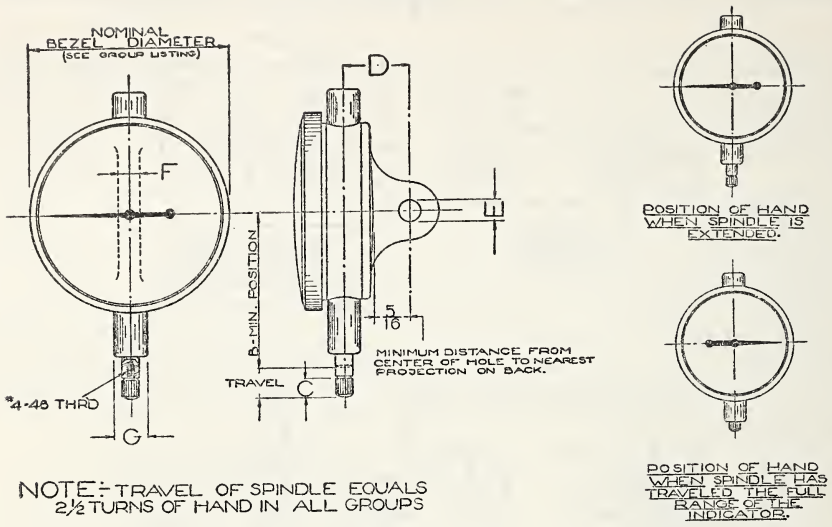
Range		*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J* Drill	*K*
Above—	To and including—										
Inch	*Inches*	*Inches*	*Inches*	*Inch*	*Inches*	*Inches*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*
0. 059	0. 240	2	1¼	¼	1	½	⅛	⅜	7/16	-----	3/64
. 240	. 510	2½	1⅝	¼	1¼	⅝	⅛	½	¾	-----	7/32
. 510	. 825	4	2½	¼	2	1	¼	½	1⅜	15/32	15/32
. 825	1. 135	4¼	3	¼	2	1⅛	¼	½	1⅝	25/32	25/32

DIAL INDICATORS

40. In 1938 a subcommittee, composed of dial indicator manufacturers and users, was appointed to work out the possibility of standardizing basic mounting dimensions of dial indicators so that various makes and models might be interchangeably mounted. As a result of the recommendations of the subcommittee, the dimensions shown in table 37, page 54, were approved and adopted in June 1939, by the American Gage Design Committee.

41. In addition to standard mounting dimensions, it was decided that the range or spindle travel should be consistent with the magnification, and the practice was adopted to have the spindle travel equal to 2½ revolutions of the indicating hand, except for special applications requiring greater travel. Another practice which was adopted is to set the indicating hand at the 9 o'clock position (¼ revolution to the left of zero) when the spindle is in the rest position. This practice permits measuring on both the plus and minus sides of zero without making a full revolution of the indicating hand.

TABLE 37.—*Dial indicators*



Group	Nominal bezel diameters		*B*	*C*	*D*	*E*	*F*	*G*
	Above—	To and including—						
	Inches	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
1	1 3/8	2	1 5/8	1/4	3/4	1/4	1/4	3/8
2	2	2 3/8	2	1/4	3/4	1/4	1/4	3/8
3	2 3/8	3	2 1/8	1/4	3/4	1/4	1/4	3/8
4	3	3 3/4	2 9/16	1/4	3/4	1/4	1/4	3/8

MASTER DISKS

42. Master disks have been manufactured by various firms and have been widely used for the setting and checking of comparators and adjustable snap gages, and for other applications where precision gage blocks might be used but where gages of cylindrical form would be preferred. The designs shown in tables 38 to 44, inclusive, pages 55 to 61, figures 15 and 16, pages 54 and 60, were adopted as standard by the committee in 1938. These cover the range of sizes from above 0.105 inch to and including 8.010 inches.

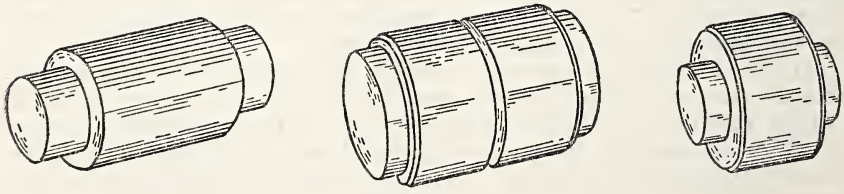
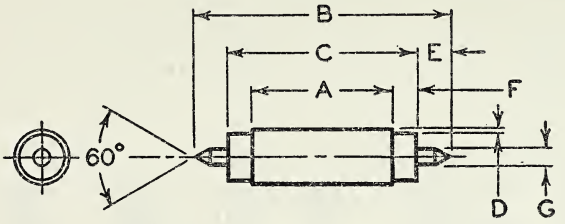
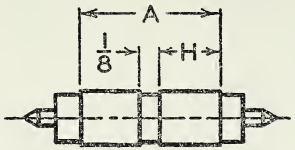


FIGURE 15.—*American Gage Design Standard master disks, styles 1, 2, and 3.*

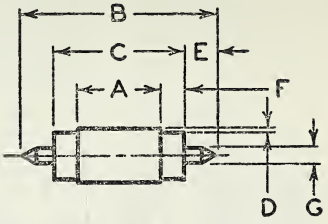
TABLE 38.—*Master disks, range above 0.105 to and including 0.365 inch*



STYLE 1



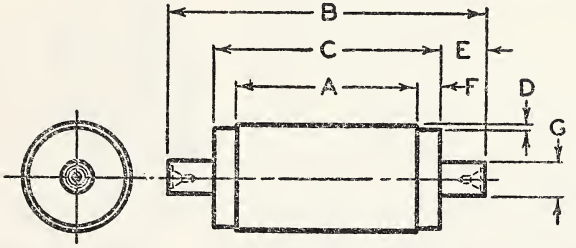
STYLE 2



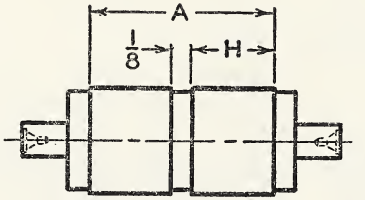
STYLE 3

Range in diameters		Styles 1 and 2								Style 3						
Above—	To and including—	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Inch	*Inch*	*Inch*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
0. 105	0. 150	3/4	1 9/16	1 1/16	0. 005	1/4	5/32	0. 050	5/16	3/8	1 3/16	1 1/16	0. 005	1/4	5/32	0. 050
. 150	. 240	7/8	1 11/16	1 3/16	. 005	1/4	5/32	. 080	3/8	7/16	1 1/4	3/4	. 005	1/4	5/32	. 080
. 240	. 365	1	1 13/16	1 5/16	. 010	1/4	5/32	. 128	7/16	1/2	1 5/16	1 3/16	. 010	1/4	5/32	. 128

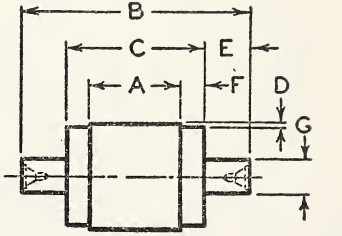
TABLE 39.—*Master disks, range above 0.365 to and including 1.510 inches*



STYLE 1



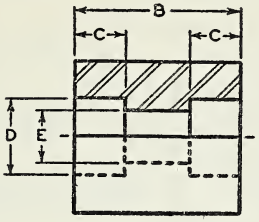
STYLE 2



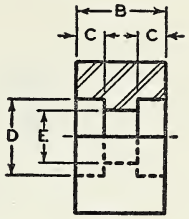
STYLE 3

Range in diameters		Styles 1 and 2								Style 3						
Above—	To and including—	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Inch	*Inches*	*Inch*	*Inches*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*	*Inches*	*Inch*	*Inch*	*Inch*	*Inch*	*Inch*
0. 365	0. 510	1 1/8	2 1/16	1 7/16	0. 010	5/16	5/32	0. 188	1/2	9/16	1 1/2	7/8	0. 010	5/16	5/32	0. 188
. 510	. 825	1 1/4	2 3/16	1 9/16	. 010	5/16	5/32	. 250	9/16	5/8	1 9/16	15/16	. 010	5/16	5/32	. 250
. 825	1. 135	1 3/8	2 9/16	1 11/16	. 010	7/16	5/32	. 500	5/8	11/16	1 7/8	1	. 010	7/16	5/32	. 500
1. 135	1. 510	1 5/8	2 13/16	1 15/16	. 010	7/16	5/32	. 625	3/4	13/16	2	1 1/8	. 010	7/16	5/32	. 625

TABLE 40.—*Master disks, range above 1.510 to and including 2.510 inches*



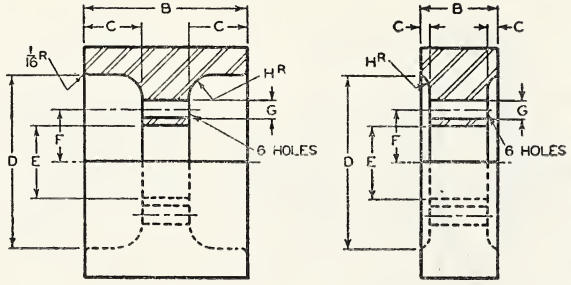
STYLE 1



STYLE 2 & 3

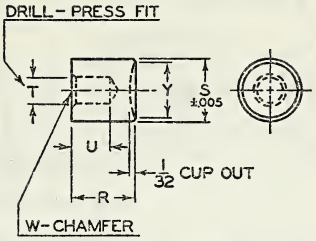
Range in diameters		Style 1				Styles 2 and 3			
Above—	To and including—	*B*	*C*	*D*	*E*	*B*	*C*	*D*	*E*
In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
1. 510	2. 010	1 7/8	1/2	25/32	17/32	7/8	9/32	25/32	17/32
2. 010	2. 510	2	1/2	25/32	17/32	7/8	9/32	25/32	17/32

TABLE 41.—*Master disks, range above 2.510 to and including 8.010 inches*

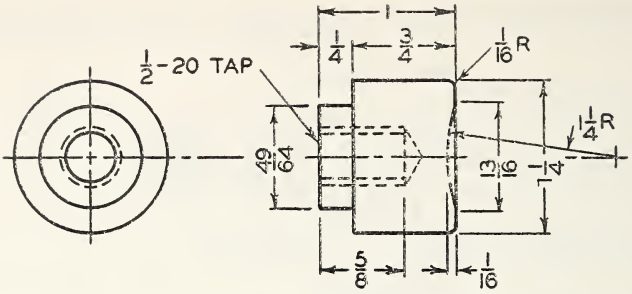


Range in diameters		Style 1							Styles 2 and 3						
Above—	To and including—	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
In.	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*	*In.*
2.510	3.010	2 1/8	11/16	1 7/8	29/32	------	------	3/16	1	1/8	1 7/8	29/32	------	------	3/16
3.010	3.510	2 1/4	3/4	2 1/4	29/32	------	------	5/16	1	1/8	2 1/4	29/32	------	------	3/16
3.510	4.010	2 1/4	3/4	2 5/8	29/32	------	------	5/16	1	1/8	2 5/8	29/32	------	------	3/16
4.010	4.510	2 1/4	3/4	3	29/32	1 1/16	3/4	5/16	1	1/8	3	29/32	1 1/16	3/4	3/16
4.510	5.010	2 1/4	3/4	3 7/16	29/32	1 3/16	13/16	5/16	1	1/8	3 7/16	29/32	1 3/16	13/16	3/16
5.010	5.510	2 1/4	3/4	3 7/8	29/32	1 1/4	7/8	5/16	1	1/8	3 7/8	29/32	1 1/4	7/8	3/16
5.010	6.010	2 1/4	3/4	4 5/16	29/32	1 3/8	1	5/16	1	1/8	4 5/16	29/32	1 3/8	1	3/16
6.010	6.510	2 1/4	3/4	4 3/4	29/32	1 1/2	1 1/8	5/16	1	1/8	4 3/4	29/32	1 1/2	1 1/8	3/16
6.510	7.010	2 1/4	3/4	5 1/4	29/32	1 5/8	1 1/4	5/16	1	1/8	5 1/4	29/32	1 5/8	1 1/4	3/16
7.010	7.510	2 1/4	3/4	5 3/4	29/32	1 3/4	1 3/8	5/16	1	1/8	5 3/4	29/32	1 3/4	1 3/8	3/16
7.510	8.010	2 1/4	3/4	6 1/4	29/32	1 7/8	1 1/2	5/16	1	1/8	6 1/4	29/32	1 7/8	1 1/2	3/16

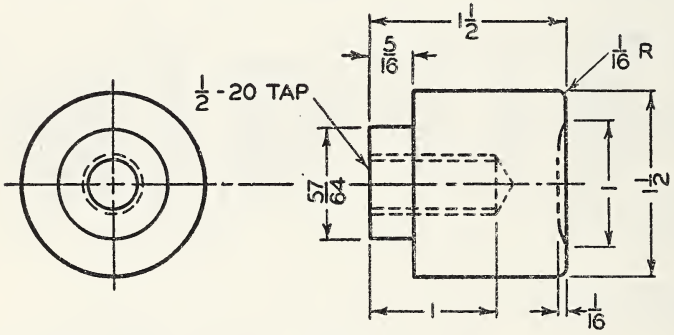
TABLE 42.—*Insulating grips for master disks, range above 0.105 to and including 1.510 inches*



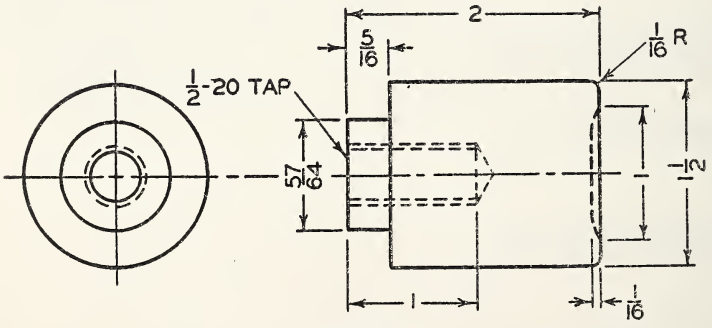
Range in diameters		*R*	*S*	*T* Drill size	*U*	*W*	*Y*
Above—	To and including—						
Inches	*Inches*	*Inch*	*Inch*		*Inch*		*Inch*
0. 105	0. 150	7/16	3/32	No. 55 (0. 052)	9/32	----------	------
. 150	. 240	7/16	1/8	No. 46 (. 081)	9/32	----------	------
. 240	. 365	7/16	7/32	No. 30 (. 128)	9/32	1/64×45°	0. 142
. 365	. 510	1/2	11/32	No. 12 (. 189)	11/32	1/32×45°	. 223
. 510	. 825	1/2	1/2	1/4 (. 250)	11/32	1/32×45°	. 325
. 825	1. 135	5/8	3/4	1/2 (. 500)	15/32	1/32×45°	. 529
1. 135	1. 510	5/8	1	5/8 (. 625)	15/32	1/32×45°	. 649



RANGE: ABOVE 1.510 TO AND INCLUDING 2.510 INCHES



STYLE 2 & 3

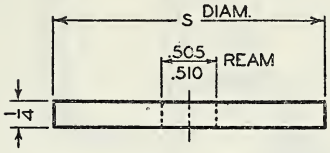


STYLE 1

RANGE: ABOVE 2.510 TO AND INCLUDING 8.010 INCHES

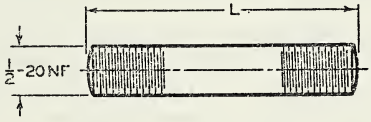
FIGURE 16.—*Insulating grips for master disks, range above 1.510 to and including 8.010 inches.*

TABLE 43.—*Separator plates for master disks, range above 1.510 to and including 8.010 inches*



Range in diameters		*S*	Range in diameters		*S*
Above—	To and including—	Diameter	Above—	To and including—	Diameter
Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*
1. 510	2. 010	1 7/16	5. 010	5. 510	4 15/16
2. 010	2. 510	1 15/16	5. 510	6. 010	5 7/16
2. 510	3. 010	2 7/16	6. 010	6. 510	5 15/16
3. 010	3. 510	2 15/16	6. 510	7. 010	6 7/16
3. 510	4. 010	3 7/16	7. 010	7. 510	6 15/16
4. 010	4. 510	3 15/16	7. 510	8. 010	7 7/16
4. 510	5. 010	4 7/16			

TABLE 44.—*Tie rods for master disks, range above 1.510 to and including 8.010 inches.*



Range in diameters		*L* Length		
Above—	To and including—	Go, style 1	Go and not go, style 2	Not go, style 3
Inches	*Inches*	*Inches*	*Inches*	*Inches*
1.510	2.510	2 3/8	2 1/2	1 3/8
2.510	8.010	2	3 1/8	2

OFFICIAL MONOGRAM FOR DESIGNATING PRODUCTS MADE TO AMERICAN GAGE DESIGN STANDARDS

43. The optional use of the monogram shown in figure 17, page 62, to identify gages made to American Gage Design Standards, is sanctioned by the committee. The monogram, it will be noted, consists of the initials "AD", the right-hand side of the "A" and the straight side of the "D" being common. The monogram, if used, should be placed adjacent to the maker's trade mark.

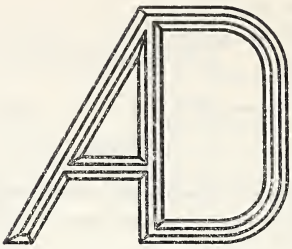


FIGURE 17.—*Official monogram for designating products made to American Gage Design Standards.*

APPLICATION OF AMERICAN GAGE DESIGN STANDARDS TO SPECIAL TYPES OF GAGES, RECOMMENDED PRACTICE

44. While the American Gage Design Standards have been adopted with specific types and sizes of gages in mind, it is recommended that standard blanks, handles, etc., be used wherever practicable in the design and manufacture of special gages, the design of which did not come within the scope of the committee's work.

45. Where lengths and diameters are entirely special and blanks of standard dimensions cannot be utilized, it is further recommended that standard handles and fittings be used.

46. Observance of this practice will tend to reduce costs and facilitate procurement.

47. There are many commonly used gages which are not adaptable to detailed standardization, but which can be classified, to advantage, as to types or general designs. A number of these have been studied by the American Gage Design Committee, and it is recommended that the general constructions outlined in figures 18 to 26, inclusive, and table 45, pages 62 to 66, be adhered to whenever practicable.

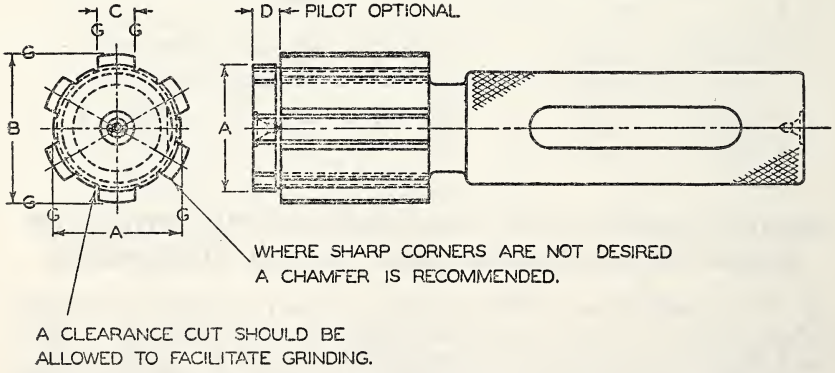


FIGURE 18.—*Recommended design of "go" spline plug gage.*

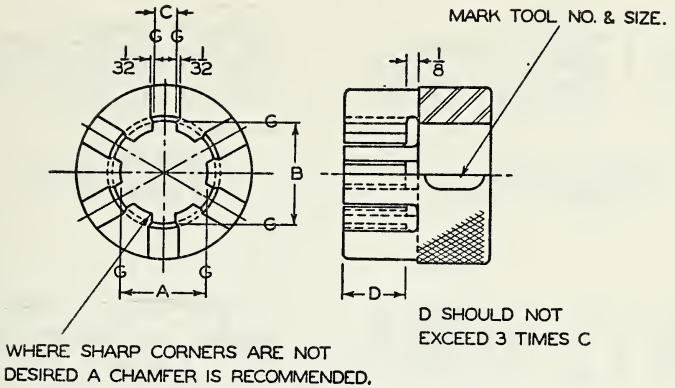
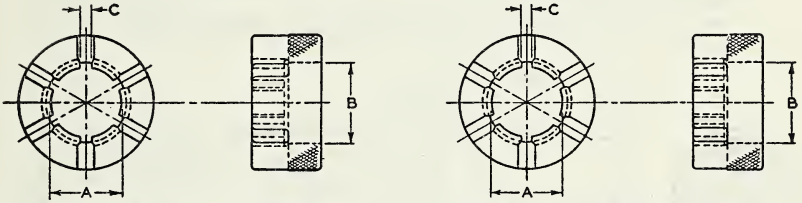


FIGURE 19.—*Recommended design of "go" spline ring gage.*



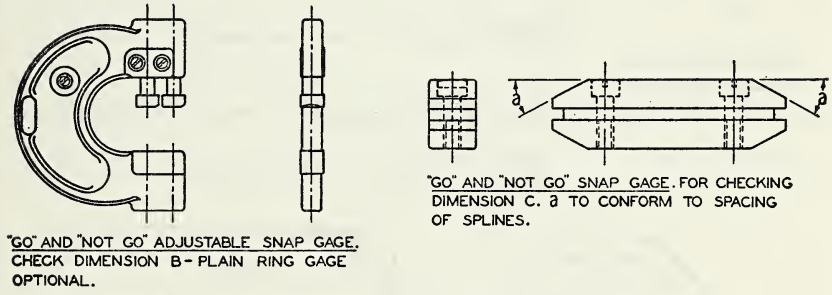


FIGURE 20.—*Gages for complete checking of external splines.*

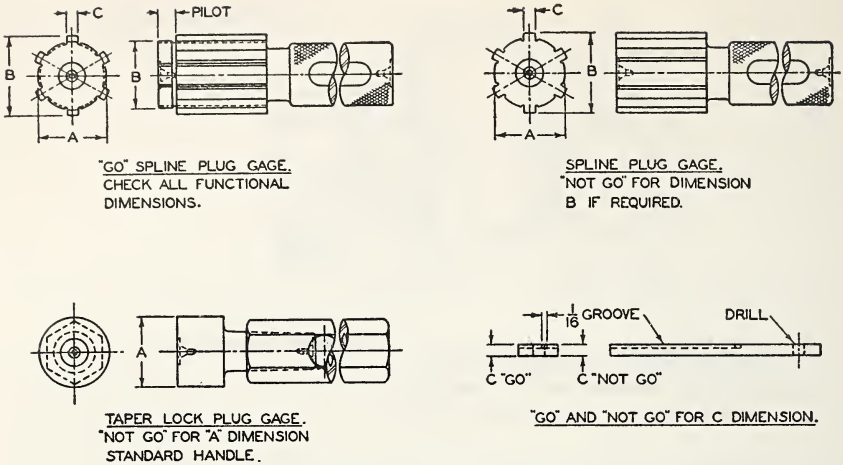


FIGURE 21.—*Gages for complete checking of internal splines.*

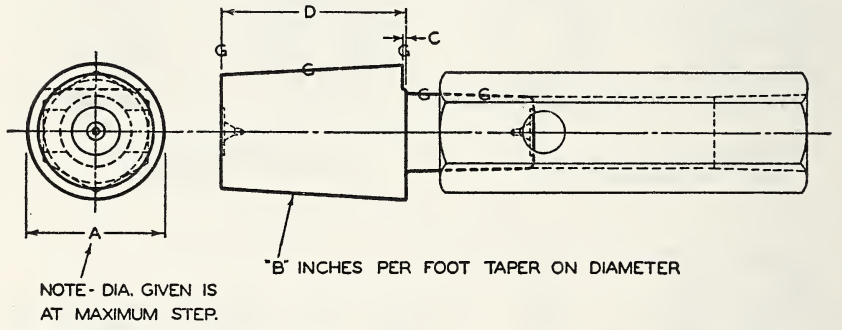


FIGURE 22.—*Recommended design of taper plug gage and method of dimensioning.*

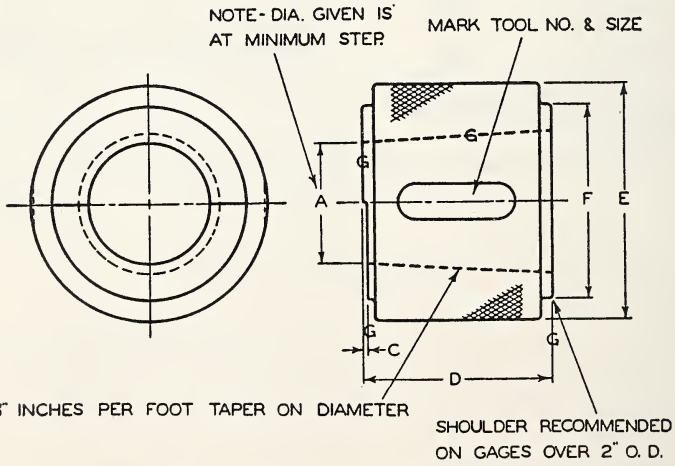


FIGURE 23.—*Recommended design of taper ring gage and method of dimensioning.*

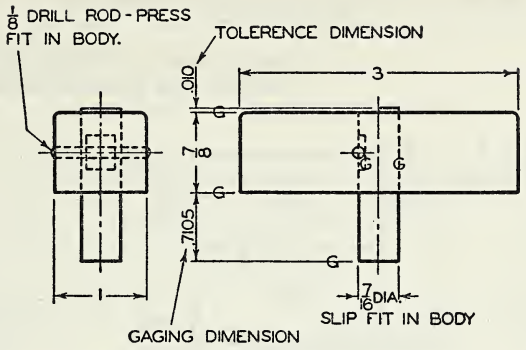


FIGURE 24.—*Recommended design and method of dimensioning short flush-pin gage.*

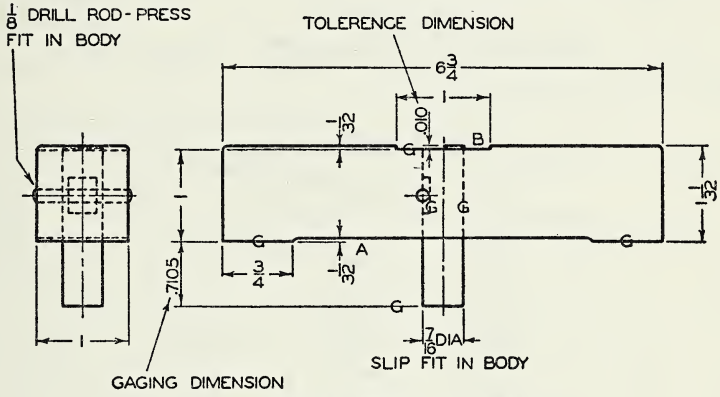


FIGURE 25.—*Recommended design and method of dimensioning long flush-pin gage.*

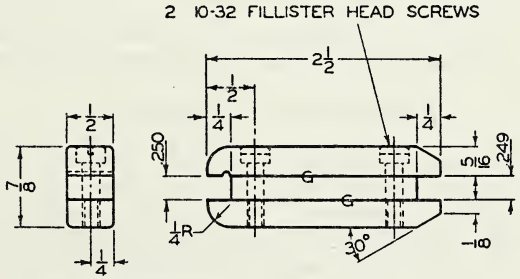
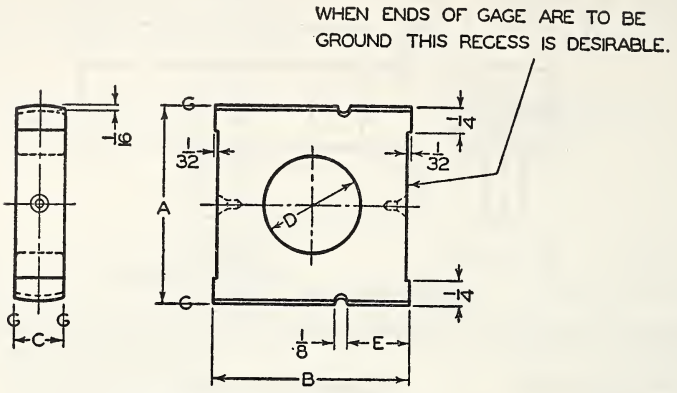


FIGURE 26.—*Recommended design of built-up snap gage.*

TABLE 45.—*Recommended design of flat plug gages, range above 1.510 to and including 8.010 inches*



A Range in diameters		*C* Thickness
Above—	To and including—	
Inches	*Inches*	*Inch*
1. 510	2. 010	7/16
2. 010	2. 510	1/2
2. 510	3. 010	9/16
3. 010	3. 510	5/8
3. 510	4. 010	11/16
4. 010	5. 010	3/4
5. 010	6. 010	7/8
6. 010	8. 010	1

EFFECTIVE DATE

48. The standard is effective for new production from January 1, 1941, and for clearance of existing stocks from January 1, 1942.

STANDING COMMITTEE

49. The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each organization nominated its own representatives. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

Col. J. O. JOHNSON (chairman), Gordonsville, Va.
C. H. BORNEMAN, General Electric Co., 1 River Road, Schenectady, N. Y.
W. L. BARTH, General Motors Corporation, General Motors Building, Detroit, Mich.

F. S. Blackall, Jr., Taft-Peirce Mfg. Co., 1937 Blackall, Woonsocket, R. I.
E. J. Bryant, Greenfield Tap and Die Corporation, 611 West Washington Boulevard, Chicago, Ill.
C. R. Burt, Pratt and Whitney, Division Niles-Bement-Pond Co., Charter Oak Boulevard, West Hartford, Conn.
C. B. LePage, American Society of Mechanical Engineers, 29 West 39th St., New York, N. Y.

AMERICAN GAGE DESIGN COMMITTEE

50. The following, among others, have participated in the work of the American Gage Design Committee:

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#Warren Ames, B. C. Ames Co., Waltham, Mass.
W. L. Barth, General Motors Corporation, Detroit, Mich.
J. Chester Bath, John Bath & Co., Worcester, Mass.
H. W. Bearce, secretary, National Bureau of Standards, Washington, D. C.
F. J. Benesch, machine manufacturing planning division, Western Electric Co., Hawthorne Station, Chicago, Ill.
‡*†F. S. Blackall, Jr., chairman of editorial subcommittee, president and general manager, The Taft-Peirce Manufacturing Co., Woonsocket, R. I.
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#E. A. Hanson, president, The Hanson-Whitney Machine Co., Hartford, Conn.
H. E. Harris, Bridgeport, Conn.
P. M. Herrick, Cadillac division, General Motors Corporation, Detroit, Mich.
H. D. Hiatt, Nash Motors Co., Racine, Wis.
W. L. Hindman, Dodge Bros. (Inc.), Detroit, Mich.
Commander H. B. Hird, Navy Department, Washington, D. C.
P. R. Houser, International Harvester Co., Chicago, Ill.
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A. M. Lord, Taylor Instrument Cos., Rochester, N. Y. (deceased).
N. B. MacLaren, Brown and Sharpe Mfg. Co., Providence, R. I.
Fred H. Markwick, Sheffield Gage Corporation, Dayton, Ohio.
Chas. F. McElwain, International Business Machines Corporation, Endicott, N. Y.

See footnotes on page 68.

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#‡P. V. Miller, chairman of technical subcommittee (1933—), manager, small tool department, The Taft-Peirce Manufacturing Co., Woonsocket, R. I.
C. H. Moen, Muncie Products Co., Muncie, Ind.
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‡D. W. Ovaitt, chairman of technical subcommittee (1926–30) Dodge Bros. Corporation, Division The Chrysler Corporation, Detroit, Mich.
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Louis E. Peck, general manager, the Threadwell Tool Co., Greenfield, Mass.
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#†Louis Poock, Sheffield Gage Corporation, Dayton, Ohio.
T. W. Ragan, Western Electric Co., Chicago, Ill.
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P. D. Ritchey, The Standard Gage Co., Poughkeepsie, N. Y.
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W. H. Scheer, Swedish Gage Co. of America, Detroit, Mich.
‡A. W. Schoof, gage development and standards department, Western Electric Co., Hawthorne Station, Chicago, Ill.
A. J. Schwartz, United States Naval Gun Factory, Navy Yard, Washington, D. C.
John Selznick, Standard Gage Co., Poughkeepsie, N. Y.
J. A. Siegel, Packard Motor Car Co., Detroit, Mich.
O. J. Snider, Cadillac Motor Car Co., Detroit, Mich.
#A. H. Starrett, The L. S. Starrett Co., Athol, Mass.
H. B. Stringer, Winter Bros. Co., Wrentham, Mass.
F. C. Tanner, Federal Products Corporation, Providence, R. I.
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‡C. E. Watterson, president, The Sheffield Machine & Tool Co., Dayton Ohio (deceased).
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K. D. Williams, Bureau of Ships, Room 2335, Navy Department, Washington, D. C.
Charles E. Winter, Winter Bros. Co., Wrentham, Mass.
George R. Worner, Taylor Instrument Cos., Rochester, N. Y.

‡ Member of technical subcommittee (1926–33).
# Member of technical subcommittee (1933—).
* Member of standing committee.
† Member of editorial committee.

HISTORY OF PROJECT

51. The American Gage Design Committee was formed in December 1926 to consolidate for the benefit of industry at large the independent efforts which were already in progress on the part of a number of large industrial concerns, representatives of United States Government Departments, and several of the leading gage manufacturers to simplify gaging practice through the adoption of standard designs for gage blanks and component parts. The designs developed by the American Gage Design Committee are now available to everyone and will minimize the necessity for the manufacture of special gages of the simpler types. The committee was given full support and recognition by engineering societies, the American Standards Association, the National Bureau of Standards, the War and Navy Departments, and the National Screw Thread Commission. It should be pointed out, however, that the major work of the committee was contributed by industry itself, many of the country's largest industrial units in

widely diversified fields being represented by active membership on the committee.

52. By the spring of 1929, formal design standards had been completed and adopted for plain plug and ring, and thread plug and ring gages of all sizes above 0.059 to and including 4½ inches diameter. These standards were published in March 1930 as Miscellaneous Publication No. 100 of the National Bureau of Standards, entitled "Plain and Thread Plug and Ring Gage Blanks, Recommended Commercial Standard", and were subsequently promulgated by the Department of Commerce as Commercial Standard CS8–30. They were later approved by the American Standards Association as American Standard B47–1932.

FIRST REVISION

53. The widespread and almost immediate adoption of the original American Gage Design Standards by gage manufacturers and industry at large led to a very insistent demand that this work be extended to include gages of larger sizes and of other types commonly in use. Since the original report was published a considerable number of suggestions have been received from industry at large, particularly in response to the adherence survey of the American Gage Design Standards. The committee has given every suggestion the most painstaking study, and the best of them have been adopted in the present report.

54. No attempt has been made to set gage tolerances or fits, the work being confined solely to selection of the best possible designs for gage blanks; but the work on fits and tolerances of the National Screw Thread Commission and of the Sectional Committee on Allowances and Tolerances for Cylindrical Parts and Limit Gages is available for use in connection with gages made to American Gage design Standards.

55. The revised standard was published and promulgated by the Department of Commerce as Gage Blanks (Second Edition), Commercial Standard CS8–33, effective for new production January 1, 1934, and for clearance of existing stocks one year later. It was also approved as American Standard B47–1933.

SECOND REVISION

56. On October 22, 1940, on recommendation of the American Gage Design Committee and with the approval of the Standing Committee, a second revision was circulated to producers and users for acceptance. This revision covers additional gage blanks for thread setting plug gages, taper thread ring gages, dial indicators, and master disks. Standard designs without complete dimensional specifications are recommended for spline plug and ring gages, taper plug and ring gages, flush-pin gages, built-up snap gages, and flat plug gages. Adjustable length gages are completely revised, and minor revisions are recorded for trilock handles, plain and thread ring gages in the smallest ranges, taper plug and ring gages for checking taper lock handles and gaging members, plain adjustable snap gages, and twin ring gage blanks. Upon acceptance by a satisfactory majority of the industry, the establishment of the revision was announced December 27, 1940.

57. In promulgating these standards, the committee has not intended to render obsolete existing stocks of gages in the hands of manufacturers or users; rather, it has been its intention to provide a standard which could be gradually adopted through replacement of existing stocks. Representing the best ideas of industry at large, including gage makers and gage users, the American Gage Design Standards should have whole-hearted support and be accepted and used by gage purchasers, and should render obsolete the wasteful and costly practice of requisitioning gages to individual design standards, which has existed in many cases heretofore. Tool supervisors and standards departments of large industrial concerns are particularly urged to adopt, as soon as practicable, the American Gage Design Standards as a substitute for any individual standards which may now be employed.

58. The committee's efforts to make available in every instance the best possible design of gage blank was materially furthered by the generous action of the gage manufacturers represented on the committee, most of whom offered without reservation to dedicate to public use their proprietary patent rights on any gage construction the utilization of which might be desired by the committee. The committee desires to make formal recognition of the specific action of the Pratt & Whitney Co., of Hartford, Conn., and the Taft-Peirce Manufacturing Co., of Woonsocket, R. I., in contributing, respectively, their patented trilock plug gage design and patented single-unit thread ring gage locking device to public use, as a part of this standardization program.

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date _____

Division of Trade Standards,
National Bureau of Standards,
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS8–41 as our standard of practice in the

Production [1] Distribution [1] Use [1]

of gage blanks.

We will assist in securing its general recognition and use and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City and State _____

(cut on this line)

[1] Please designate which group you represent by drawing lines through the other two. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations and individuals listed below have accepted this commercial standard as their standard of practice in the production, distribution, and use of gage blanks. Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor that producers so listed guarantee all of their products in this field to conform with the requirements of this standard. Therefore specific evidence of conformity should be obtained where required.

ASSOCIATIONS

American Association of Engineers, Chicago, Ill.
American Petroleum Institute, New York, N. Y. (In principle.)
Gray Iron Founders' Society, Inc., Cleveland, Ohio.
Manufacturers Standardization Society of the Valve and Fittings Industry, New York, N. Y.
Metal Cutting Tool Institute, Hartford, Conn.
Milling Cutter Society, New York N. Y. (In principle.)
National Retail Hardware Association, Indianapolis, Ind.
Railway Appliance Manufacturers Association, Chicago, Ill.
Tap & Die Institute, The, New York, N. Y. (In principle.)

FIRMS

Alliance Manufacturing Co., The, Alliance, Ohio.
Allis-Chalmers Manufacturing Co., Springfield Works, Springfield, Ill.
American Locomotive Co., Schenectady, N. Y.
American Screw Co., Providence, R. I.
Ames Co., B. C., Waltham, Mass.
Armstrong Manufacturing Co., Portland, Oreg.
Arnold Gauge Co., Flint, Mich.
Atlas-Ansonia Co., The, New Haven, Conn.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bath Co., John, Worcester, Mass.
Bausch & Lomb Optical Co., Rochester, N. Y.
Beard Tool Co., L. O., Lancaster, Pa.
Bendix Aviation Corporation, Eclipse Aviation Division, Bendix, N. J.
Bethlehem Steel Co., Bethlehem and Lebanon, Pa.
Breeze Corporations, Inc., Newark, N. J.
Bristol & Martin, Inc., New York, N. Y.
Brown & Sharpe Manufacturing Co., Providence, R. I.
Buda Co., The, Harvey, Ill.
Cambridge Instrument Co., Inc., Ossining, N. Y.
Carboloy Co., Inc., Detroit, Mich.
Card Manufacturing Co., S. W., Mansfield, Mass.
Central Auto Ign. Co., Chicago, Ill.
Century Electric Co., St. Louis, Mo.
Chevrolet Motor Car Co., Flint, Mich.
Chicago Dial Indicator Co., Chicago, Ill.
City Engineering Co., The, Dayton, Ohio.
Colt's Patent Fire Arms Manufacturing Co., Hartford, Conn.
Columbus Die, Tool, & Machine Co., Columbus, Ohio.
Connecticut Tool & Engineering Co., Bridgeport, Conn.
Conwell & Co., E. L., Philadelphia, Pa. (In principle.)
Corbin Screw Corporation, The, New Britain, Conn.
Cornwell Quality Tools Co., The, Mogadore, Ohio.
Crane Co., Chicago, Ill.
Crewe Manufacturing & Tool Co., Cleveland, Ohio.
Detroit Tap & Tool Co., Detroit, Mich.
Dexter Folder Co., Pearl River, N. Y.
Doyle Machine & Tool Corporation, Syracuse, N. Y.
Eaton Manufacturing Co., Wilcox-Rich Division, Detroit, Mich.
Ekstrom, Carlson & Co., Rockford, Ill.
Electric Auto-Lite Co., La Crosse, Wis.
Electric Boat Co., Groton, Conn.
Emery Industries, Inc., Cincinnati, Ohio.
Eureka Stamping & Manufacturing Co., Cleveland, Ohio.
Ex-Cell-O Corporation, Detroit, Mich.
Fairmont Railway Motors, Inc., Fairmont, Minn.
Federal Products Corporation, Providence, R. I.
Ferry Cap & Set Screw Co., The, Cleveland, Ohio.
Gaertner Scientific Corporation, The, Chicago, Ill.
General Electric Co., Schenectady, N. Y.

General Motors Corporation, Detroit, Mich.
Geometric Tool Co., The, New Haven, Conn.
Gisholt Machine Co., Madison, Wis.
Grabler Manufacturing Co., The, Cleveland, Ohio.
Greenfield Tap & Die Corporation, Greenfield, Mass.
Grumman Aircraft Engineering Corporation, Bethpage, N. Y.
Gurley, W. & L. E., Troy, N. Y.
Hays Corporation, The, Michigan City, Ind.
Hudson Motor Car Co., Detroit, Mich.
Indicating Calipers Corporation, New York, N. Y.
Inland States Testing Laboratory, Dubuque, Iowa.
International Business Machines Corporation, Endicott, N. Y.
International Harvester Co., Chicago, Ill.
International Nickel Co., Inc., The, Huntington Works, Huntington, W. Va.
Johnson Rule Manufacturing Co., E. P., Chicago, Ill.
Johnston & Jennings Co., The, Cleveland, Ohio.
Jones & Lamson Machine Co., Springfield, Vt.
Kalamazoo Railway Supply Co., Kalamazoo, Mich.
King Engineering Corporation, Ann Arbor, Mich.
King Seeley Corporation, Ann Arbor, Mich.
Lamson & Sessions Co., The, Cleveland, Ohio.
Leeds & Northrup Co., Philadelphia, Pa.
Lima Locomotive Works, Inc., Lima, Ohio.
Lincoln Park Tool & Gage Co., The, Lincoln Park, Mich.
Link-Belt Co., 39th St. Plant, Chicago, Ill.
Los Angeles Testing Laboratory, Los Angeles, Calif.
MacNick Co., Tulsa, Okla.
Mann & Co., Hutchinson, Kans.
Marchant Calculating Machine Co., Oakland, Calif.
Merz Engineering Co., Indianapolis, Ind.
Michigan, University of, Ann Arbor, Mich.
Midwestern Tool Co., Chicago, Ill.
Morse Twist Drill & Machine Co., New Bedford, Mass.
National Acme Co., The, Cleveland, Ohio.
National Tube Co., Pittsburgh, Pa.
New England Council, Boston, Mass.
New York Air Brake Co., The, Watertown, N. Y.
Oliver Iron & Steel Corporation, Pittsburgh, Pa.
Owatonna Tool Co., Owatonna, Minn.
Packard Motor Car Co., Detroit, Mich.
Perkins & Son, Inc., B. F., Holyoke, Mass.
Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn.
R. & M. Manufacturing Co., Royal Oak, Mich.
Reed & Prince Manufacturing Co., Worcester, Mass.
Reed Small Tool Works, Worcester, Mass.
Republic Steel Corporation, Cleveland, Ohio.
Rhode Island Tool Co., Providence, R. I.
Scherr Co., Inc., George, New York, N. Y.
Sheffield Gage Corporation, Dayton, Ohio.
Small Arms Ltd., Long Branch, Ontario, Canada.
Snap-On Tools Corporation, Kenosha, Wis.
Snead & Co., Orange, Va.
Solar Aircraft Co., San Diego, Calif.
Spicer Manufacturing Corporation, Pottstown, Pa.
Standard Gage Co., Inc., Poughkeepsie, N. Y.
Standard Motor Products, Inc., Long Island City, N. Y.
Strippit Corporation, The, Buffalo, N. Y.
Taft-Peirce Manufacturing Co., The, Woonsocket, R. I. and Cleveland, Ohio.
Taylor Instrument Cos., Rochester, N. Y.
Threadwell Tap & Die Co., Greenfield, Mass.
Track Specialties Co., Inc., New York, N. Y. (In principle.)
Trent Co., Harold E., Philadelphia, Pa.
Troy Tool & Gage Co., Detroit, Mich.
Twining Laboratories, The, Fresno, Calif.
Union Twist Drill Co., Athol, Mass.
United Precision Products Co., Chicago, Ill.
Van Keuren Co., The, Watertown, Mass.
Vinco Corporation, Detroit, Mich.
Ward & Co., E. H., Chicago, Ill.

Warner & Swasey Co., The, Cleveland, Ohio.
West & Dodge Thread Gauge Co., Inc., Boston, Mass.
Western Electric Co., Inc., New York, N. Y.
Western Union Telegraph Co., New York, N. Y.
Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
Whitcomb Locomotive Co., The, Rochelle, Ill.
White Motor Co., The, Cleveland, Ohio.
Williams & Co., J. H., Buffalo, N. Y.
Willys Overland Motors, Inc., Toledo, Ohio.
Winter Brothers Co., Wrentham, Mass.
Wood & Spencer Co., The, Cleveland, Ohio.

U. S. GOVERNMENT

Treasury Department, Washington, D. C.
Veterans' Administration, Washington, D. C.
War Department, Washington, D. C.

COMMERCIAL STANDARDS

CS No. Item

0–40. Commercial standards and their value to business (third edition).
1–32. Clinical thermometers (second edition).
2–30. Mopsticks.
3–40. Stoddard solvent (third edition).
4–29. Staple porcelain (all-clay) plumbing fixtures.
5–40. Pipe nipples; brass, copper, steel, and wrought iron.
6–31. Wrought-iron pipe nipples (second edition). Superseded by CS5–40.
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8–41. Gage blanks (third edition).
9–33. Builders' template hardware (second edition).
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11–29. Regain of mercerized cotton yarns.
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13–39. Dress patterns (second edition).
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16–29. Wall paper.
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25–30. Special screw threads.
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28–32. Cotton-fabric tents, tarpaulins, and covers.
29–31. Staple seats for water-closet bowls.
30–31. Colors for sanitary ware.
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32–31. Cotton cloth for rubber and pyroxylin coating.
33–32. Knit underwear (exclusive of rayon).
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35–31. Plywood (hardwood and eastern red cedar).
36–33. Fourdrinier wire cloth (second edition).
37–31. Steel bone plates and screws.
38–32. Hospital rubber sheeting.
39–37. Wool and part-wool blankets (second edition).
40–32. Surgeons' rubber gloves.
41–32. Surgeons' latex gloves.
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43–32. Grading of sulphonated oils.
44–32. Apple wraps.
45–40. Douglas fir plywood (domestic grades) (fourth edition).
46–40. Hosiery lengths and sizes (third edition).
47–34. Marking of gold-filled and rolled-gold-plate articles other than watch cases.
48–40. Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49–34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50–34. Binders' board for bookbinding and other purposes.
51–35. Marking articles made of silver in combination with gold.
52–35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53–35. Colors and finishes for cast stone.
54–35. Mattresses for hospitals.
55–35. Mattresses for institutions.
56–36. Oak flooring.
57–40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58–36. Woven elastic fabrics for use in overalls (overall elastic webbing).
59–39. Woven dress fabrics—testing and reporting (second edition).
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61–37. Wood-slat venetian blinds.
62–38. Colors for kitchen accessories.
63–38. Colors for bathroom accessories.
64–37. Walnut veneers.
65–38. Wool and part-wool fabrics.
66–38. Marking of articles made wholly or in part of platinum.
67–38. Marking articles made of karat gold.
68–38. Liquid hypochlorite disinfectant, deodorant, and germicide.
69–38. Pine-oil disinfectant.
70–38. Coal-tar disinfectant (emulsifying type).
71–38. Cresylic disinfectants.
72–38. Household insecticide (liquid spray type).
73–38. Old growth Douglas fir standard stock doors.
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86–41. Electric stop lamps for vehicles (after market).
87–41. Red electric warning lanterns.
88–41. Liquid-burning flares.
89–40. Hardwood stair treads and risers.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington, D. C.