HEMCO
The Longer Lasting Gage™
Gages

Specialists in Chrome Gaging

ACCREDITED
Certificate #2279.01
Accredited to ISO/IEC 17025 & ANSI/NCSL Z540-1 by the American Association for Laboratory Accreditation

PROUDLY
MADE IN THE USA

Precision Gage Company
100 Shore Dr.
Burr Ridge, IL 60527
Phone: 630-655-2121
Fax: 630-655-3073
sales@precisiongageco.com

American Petroleum Institute
Spec 5B
Spec 7
Spec 11AX
Spec 11B

Welcome to the HEMCO World of Value!

HEMCO

In our continuing effort for excellence in precision gage manufacturing, we aggressively look for ways to improve. We know that in today's competitive, ever changing manufacturing environment it is not enough to just provide the best quality gaging we must also deliver it as fast as possible at the best price. We continue to make significant improvements in our ability to get the product to you quickly with higher and higher standards of quality. This means that our company must continue to change with the times and we are! Our greatest asset: Our PEOPLE-are becoming more flexible with greater versatility. This allows Hemco to respond faster to you-the customer. Our teamwork approach to solving problems is paying great dividends by further enhancing value of the Hemco gage. We look forward to serving your needs. If you don't see what you need in gaging in this catalog, call our experienced and friendly sales staff and we will do our best to help you.

Index

Minimum Order $35.00
Terms: Net 30 Days subject to credit approval.
Standard Catalog items subject to Restocking Charge.

HEMCO on the Internet: http://www.hemcogages.com

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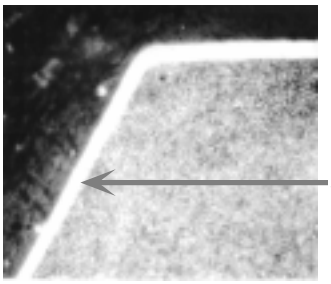
HemcoChrome Gages Save You Money!
Because They Last Longer!!

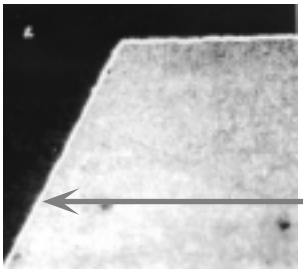
HemcoChrome Gage
Magnified 400 X



A Picture is Worth a Thousand Words

Notice that the HEMCOChrome coating thickness exceeds the competitors by many times.

Imitator Brand A
Magnified 400X

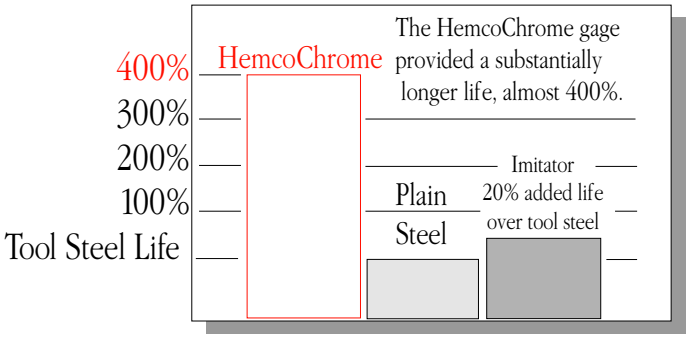


Hemco creates this unique difference by using talented teams of experienced, caring people combined with:

- ❏ 0-1 Tool Steel through-hardened to 58-62 Rc then HEMCOChrome processed to 72 Rc.
- ❏ Altered geometric engineering. We manufacture undersize then plate up to as close to the tolerance high side as possible.
- ❏ Chrome plating equipment designed & built by HEMCO specifically for tight tolerance gaging.
- ❏ Chrome Plating bath formulas improved with HEMCO's special process.

You Benefit by Saving Money! In laboratory tests the HEMCOChrome gage outlasts the competitors plain steel gage or the imitators flash chrome gage: 4:1.

Here's Proof!



Testing Laboratory results indicate that the competitor chrome gage provided 20% longer life over an unplated hardened tool steel gage.

Tested using 1/2-13 UNC Go Plugs in cast iron.

When you use The Longer Lasting HemcoChrome Gage you receive other Cash Saving Benefits:

- ❏ *They Save You Money When You Reorder!*
  Your HemcoChrome Gage can be restored to like-new condition under the Gage Saver™ Program at considerable cash savings.
- ❏ *You Save Calibration Costs!*
  They do not have to be calibrated as often.
- ❏ *You Save Overhead Costs!*
  They do not have to be ordered as often saving requisition and purchase order costs.

New Gage Certification

HEMCO

All new HEMCO gages are supplied with a Certification of Compliance at *No Charge.*


Certificate #2279.01

HEMCO The Longer Lasting Gage

American Petroleum Institute

CERTIFICATION OF COMPLIANCE

It is hereby certified that this material has been manufactured in compliance with applicable military and/or industrial standards, requirements and specifications so stated on your Purchase Order. All measurements are traceable to the National Institute of Standards and Technology, Gaithersburg, MD and are within the required limits.

HEMCO Corporation
455 Douglas Ave. Holland, MI 49424 U.S.A.
Phone: 616-396-4604 Fax: 616-396-0413
http://www.hemcogages.com

We offer two types of Certification, HEMCO Standard NIST Certification and ISO/IEC 17025 & ANSI/NCSL Z540-1 Accredited Certification.

Gage Type Prices are per member.	HEMCO Standard Certification	ISO 17025 Certification
Straight Thread Plugs & Rings	$10.00	$15.00
Tapered Thread Plugs & Rings	$15.00	$20.00
Cylindrical Plugs & Rings	$7.50	$12.50

Add $2.50 Service Charge for Certifications after gage is shipped.

ISO/IEC 17025 was developed to assess the competency of testing and calibration laboratories. Accreditation to ISO/IEC 17025 attests that: We have demonstrated competence to perform the specific calibrations or types of calibrations listed in our Scope of Accreditation; Our quality system addresses and conforms to all the elements of ISO/IEC 17025, including calibration procedures; Calibrations are performed by properly-trained personnel using controlled methods and procedures; We are operating in accordance with our quality system; and We conform to any additional requirements of A2LA or specific fields or programs necessary to meet particular user needs. Laboratories that comply with ISO/IEC 17025 also operate in accordance with ISO 9001 or ISO 9002. Conformance to ISO 9000 alone does not demonstrate a lab's ability to produce technically valid data and results, and all ISO 9000 elements relevant to calibration services within a laboratory's quality system are incorporated in ISO 17025.

To view the scope of our accreditation go to: http://www.a2la.org/scopepdf/2279-01.pdf

Inspect & Certify Charges for In-Service Gages

ISO/IEC 17025 & ANSI/NCSL Z540-1 Certifications								
Size	Thread Work Plug P.D. & O.D.	Thread Ring P.D. & I.D.	Thread Set Plug P.D. & O.D.	HILO Set Plug	Cylindrical Plugs	Cylindrical Rings	3/4 TPF Tapered Plugs	3/4 TPF Tapered Rings
0" - 4"	$15.00	$22.50	$17.50	$22.50	$12.50	$17.50	$30.00	$40.00
4" - 8"	$20.00	$25.00	$20.00	$25.00	$12.50	$22.50	O.D., P.D., Lead, Flank Angle & Taper	P.D., I.D. & Taper
8" & up	$25.00	$30.00	$30.00		$15.00	$30.00		
1. Prices are per member. 2. Add $10.00 per lead for multiple lead gages. 3. ASAP Service available								

Inspect & Certify Charges on gages not listed above, i.e. API's, special thread forms, will be priced on application.
Failed Gage Report charge: $10.00 Cert made for third party: $5.00

Inspect & Certify

HEMCO

Product Type	Turn Around
Straight Plugs	7 working days
Straight Thread Rings	10 working days
Tapered Thread Plugs	10 working days
Tapered Thread Rings	10 working days
Cylindrical Plugs	5 working days
Cylindrical Rings	10 working days
Tapered Cylindrical Rings	10 working days
Tapered Cylindrical Plugs	10 working days

**Larger orders require additional time to process.
Call HEMCO with your specific needs.

Does Gage Calibration Frustrate you?

- ❑ Turn around too long?
- ❑ Costs too high ?
- ❑ Inconvenienced replacing worn-out gages?

Let HEMCO take the frustration out of your Gage Calibration and replacement program!

Inspection & Certification of your existing gages are done in one of two environmentally controlled inspection labs with excellent turn around times and Long Form Certification traceable to N.I.S.T. in compliance with MIL-45662A.
*Ring Gages are calibrated by master plugs. Although we have over 10,000 master plugs, you may need to supply or purchase a master to calibrate your special rings. A quick call to us is all that is needed to check master plug availability.
In the event your gage(s) fail to conform to specifications, you will be advised prior to its return and the major reason(s) for its failure to pass. At that time, you will be offered our Gage Saver™ program and the quoted additional time necessary to rework or replace the failed gage(s). Any gage that is reworked or replaced that was sent in under our Inspect & Certify Service is returned with a Long Form Certification at no additional charge.

Gage Saver™ Service

Save up to 25% off the new HEMCO Gage Price.

Rework or Replace - The cost is the same.

- ❑ The Gage Saver Service unconditionally guarantees to Rework Worn Gages to a "Like New" condition through the application of the unique HEMCO Chrome process or replace them with new gages at the same reduced price.
- ❑ The cost of the Gage Saver Service is just 75% of the price of a new HEMCO Ring gage or 90% of the price of a new Plug gage of the same specifications, whether in fact the Worn Gage is Reworked or Replaced.
- ❑ The Gage Saver Service applies to the following worn gages regardless of the original manufacturer:
  - ✔ Threaded Plug and adjustable Rings*
  - ✔ Cylindrical Plugs and Rings
  - ✔ Standard or Special
  - ✔ Inch or Metric

Furthermore, Gage Savers Service not only saves you money on your gage replacement needs, it provides you with a gage which is:

- ✔ HEMCOChrome Plated.
- ✔ Guaranteed not to chip or peel.
- ✔ Built to the high side of the tolerance.
- ✔ Lasting 4 times longer than steel gages.

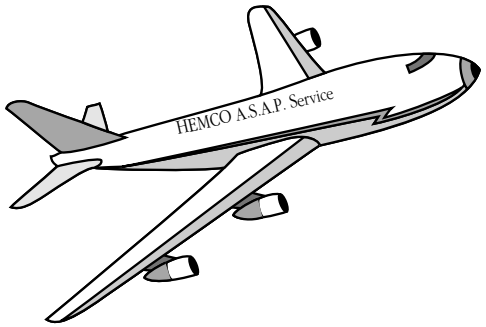
The only exclusions from the HEMCO Gage Savers Service are the rare proprietary and patented gages which HEMCO may be legally restrained from manufacturing.

*Although Hemco has over 10,000 master plugs, you may need to supply or purchase a master to calibrate your master thread rings.

Note: If certification is required, please refer to "New Gage" Certification Charge. (See page 3.)
Gages replaced by HEMCO under the Gage Saver™ program become the property of HEMCO and are not returnable.

Your Worn Gages Are Worth Money!

A.S.A.P. Service



The next time you have an *Urgent* need for *Special Thread* or *Cylindrical Gages* because of:

- ❑ Damage.
- ❑ Loss.
- ❑ Planning or Ordering oversights.
- ❑ Gage calibration failure.
- ❑ Customer Audits.

. . . utilize the:

HEMCO A.S.A.P. Service

0" - 4" Plugs . . . . . 3 Working days.
(Cylindrical Master Discs 0" to 1-1/2" require 6 Working Days).
0" - 4" Rings . . . . . 6 Working days.
0" - 4" Thread Setting Plugs . . .6 Working days.

Lead times are subject to change and will be stated at time of quote.
We reserve the right to decline quoting on certain types of gages.

The price Quoted to you includes Next Day ✈Air Freight charges to places in the lower 48 states!
(Minimum Order Amount $100.00)

Special Purpose Gaging and Thread Gages above 4"
are available through the A.S.A.P. program by special quote.
(Next Day Air Freight not included.)

Shipment Guaranteed!

Over 99.6% "on time" since HEMCO's A.S.A.P. Service was started in 1991, but if we don't deliver your gage on the date promised then your gage is shipped ✈Next Day Air Freight at HEMCO's expense and you - the customer - are invoiced at HEMCO's regular list price.

The Virtues of Limit Gaging

HEMCO

The purpose of limit gaging is to establish whether a particular feature size is functionally in tolerance.

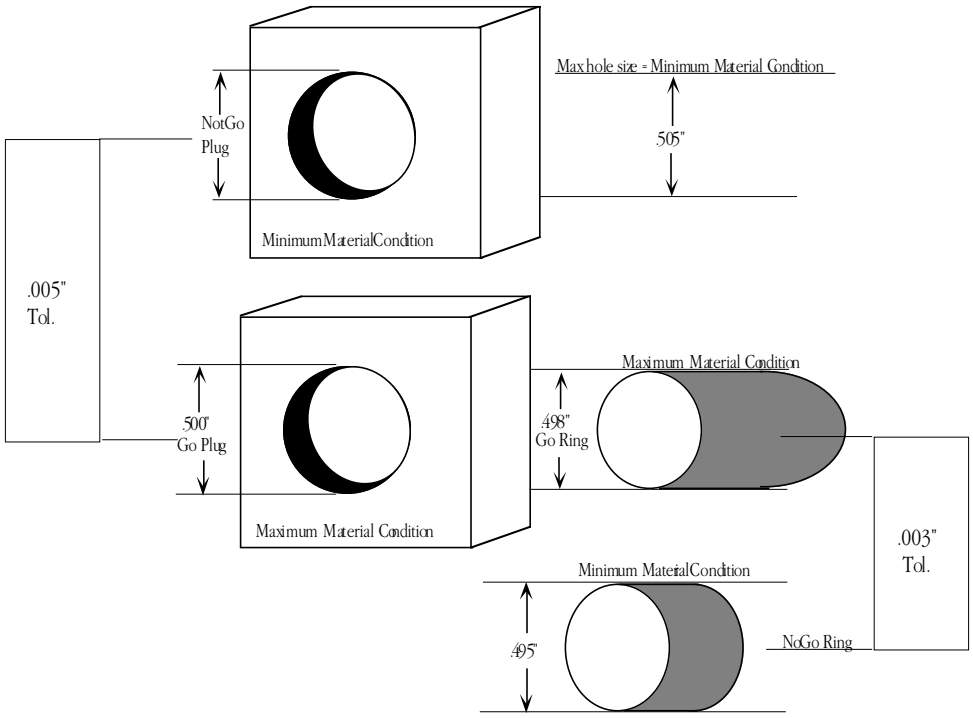
Go gages, if they pass through the feature, assure us that we have not exceeded a maximum material condition. For example: Imagine a perfect 1 inch cube of steel through which we must drill one hole of .500 +.005 /-.000 . If the Go plug gage fits, the hole could not be smaller than .500. If it does not fit, it indicates the hole is too small leaving our cube with too much material. The mating part could be a 2" long shaft with an outside diameter of .498 +.000 /-.003. This time, a Go cylindrical ring gage would be used. If you could pass the shaft through this gage, you are assured the shaft isn't larger than .498 and the maximum material condition has not been exceeded. These two parts would assemble with a minimum clearance between them of .002, assuming they are each at maximum material condition.

NoGo gages provide assurance we have not dropped below the minimum material condition specified for our part. In the case of our cube, if our NoGo plug gage does not fit, this indicates our hole is not larger than .505. If it did fit, we know our hole is too large and our cube now has too little material left. Referring to the mating shaft, our NoGo ring gage will not fit as long as the shaft is at least .495. If it does fit, we know our shaft is undersize. Hence, with one set of Go and NoGo plug gages to check the hole in the cube and one set of Go and NoGo ring gages to check the shaft, you can easily determine the limits of your product tolerances and their maximum and minimum material conditions. Go and NoGo thread gages provide the same determination of product limits and tolerances for threaded parts.

No other gaging system offers the functional assurance of assembleability between mating parts and product tolerances at such an economical cost.

It is because of this that HEMCO will continue to offer the best value for your limit gaging dollar.

Product Limits & Tolerances



Generally speaking, when ordering gages, one must keep two things in mind:

1.) Do not allow the tolerance of the Go and NoGo gages to consume more than 10% of your product tolerance. In most cases the 10% is divided equally 5% to the Go gage and 5% to the NoGo gage.

2.) Higher precision gages will accept slightly more product but with less wear life and greater expense.

Special Thread Gages

Hemco specializes in manufacturing Special Plugs & Rings of nearly every thread form:

- ❑ Acme
- ❑ Buttress
- ❑ Modified Acmes
- ❑ Modified Buttress
- ❑ Unusual Angles
- ❑ Multiple Starts
- ❑ Pitches to 100 T.P.I.
- ❑ British Whitworth

- ❑ Solid thread rings
- ❑ Hi-Lo Master Setting Plugs
- ❑ Tapered Threads
- ❑ Special Pipe
- ❑ Precision Production Thread Grinding
- ❑ Size Range: #00 to 20"
- ❑ Virtually any thread.

In the manufacturing of special thread gages, we use 0-1 tool steel HEMCOChrome plated gages. The added value of the unique HEMCOChrome process is unsurpassed in special thread gages throughout the industry. Steel gages are available upon request.

Call your Hemco Distributor or Customer Service for price and delivery.

When Ordering Thread Plugs Please Specify:

Thread Plug Gages	Qty.	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options	
			Series		Class	Condition	Handles	Type	Tolerance	Certifications		
			UNC UNF UNEF UNS	Acme Buttress Mod. Acme Mod. Buttress British Whitworth DIN/JIS	1, 1B 2, 2B 3, 3B 2C, 3C 2G, 3G	Go NoGo (HI)	Member Only (MO). Single End w/ Handle. Double End w/ Handle.	Taperlock Trilock Reversible	"X" "W"	Short Form Long Form		Extended Lead. 90° Threads. Multi-Lead. Steel Only. Left Hand.	Special Colored Handles. Special Length. Marking Instructions. Certifications.
Example	1	3/8-16	UNC		2B	HI	MO	TAPL		Long Form	.3401		
								Note 1	Note 5	Note 6	Note 2	Note 4	

When Ordering Rings & Set Plugs Please Specify:

Thread Ring Gages	Qty.	Nominal Size & T.P.I.	Select One						Pitch Diameter	Ring Options	Set Plug Options
			Series		Class	Condition	Tolerance	Certifications			
			UNC UNF UNEF UNS UNJ	Acme Buttress Mod. Acme Mod. Buttress British Whitworth DIN/JIS	1, 1A 2, 2A 3, 3A 2C, 3C 2G, 3G	Go or NoGo (Lo)	"X" "W"	Short Form Long Form		Solid Rings. Left Hand. Pre-plate. Steel only. Multi-Lead. Holders.	Left Hand. Pre-Plates. Multi-Lead. Hi-Lo. Handles.
Example	1	3/8-16	UNC		2A	Go		Long Form	.3331		
							Note 5	Note 6	Note 2	Note 4	Note 4

Notes:

1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. For Standard Pitch Diameter's, consult charts on pages 19 & 20.
3. Specify if you wish to have rings set to master setting plugs.
4. Drawings must accompany orders for specials where applicable.
5. Made to "X" tolerance unless specified.
6. See page 3 for explanation of Short & Long form Certifications.

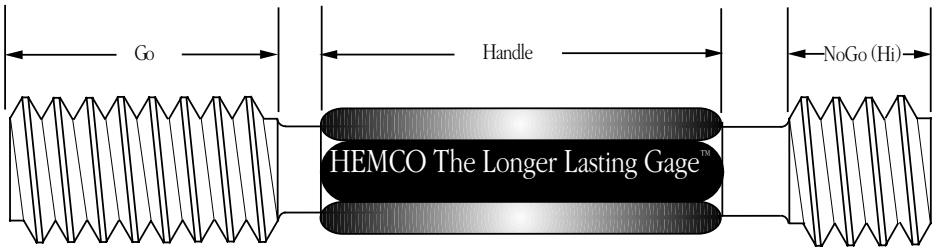
Taperlock Thread Plug Gages

HEMCOChrome Process

Machine Screw, Fractional & Metric Sizes

HEMCO

- All gages are made to ANSI Std. B47.1 and Screw Thread Standards for Federal services: Fed. Std. H28 and ANSI Std. B1.2 and B1.16M
- Gage members have tapered shanks which fit corresponding handles.
- Unconditionally guaranteed against chipping or peeling.
- All standard thread plug gages supplied with Class "X" tolerance on O.D., P.D., lead flank angles and straightness. Other tolerances can be special quoted.
- Members size #8 and greater and 32 T.P.I and coarser have their first thread convoluted and also have female centers.
- Members smaller than size #8 have chamfered threads and male centers.
- Go member sizes .190 or #10 and larger have a chip groove.



Taperlock Thread Plug Basic Dimensions								
No. or Fractional		Metric		TPI	General Dimensions			
From	To & Including	From	To & Including	***TPI Less Than	Go member length	NoGo (HI) member length	Handle no.	Handle length
0	3	M1.6	M2.5	81	1/4	3/16	000	1-1/2
4	6	M3	M3.5	61	5/16	7/32	00	1-3/4
8	12	M4	M5	49	13/32	9/32	0	2
1/4	5/16	M6	M8	41	1/2	5/16	1	2-3/4
3/8	1/2	M10	M12	37	3/4	3/8	2	3
9/16	3/4	M14	M20	33	7/8	1/2	3	3-1/4
7/8	1-1/8	M24	M29	29	1	5/8	4	3-5/8
1-1/4	1-1/2	M30	M38	29	1-1/4*	3/4	5	4
1-1/4	1-1/2	M30	M38	29	1**	3/4	5	4
* Coarser than 12 TPI **12 TPI and finer ANSI Std B47.1 ***See Table 22 ANSI B47.1								

When Ordering Taperlock Thread Plugs Please Specify:

Taperlock	Qty	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options	
			Series	Class	Condition	Handles	Type	Tolerance	Certification			
			UNC UNF UNEF UNS Acme Mod. Buttress. British Whitworth DIN/JIS	1, 1B, 2, 2B, 3, 3B, 2C, 3C, 2G, 3G	Go, NoGo, HI	Member Only (M/O) Single End, Double End.	Taperlock	"X" "W"	Compliance Short Form Long Form Other		Extended Lead, 90° Threads, Multi-Lead. Steel only. Left Hand.	Special Colored Handle. Special Length. Special Marking.
Example	1	3/8-16	UNC	2B	HI	M/O	TAPL		Long Form	.3401		
							Note 1	Note 5	Note 6	Note 2	Note 4	

Notes:

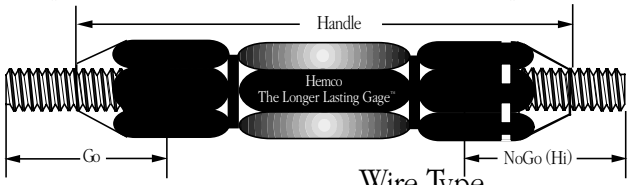
1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. For Standard Pitch Diameters, consult charts on pages 19 - 21.
3. Specify if you wish to have rings set to master setting plugs.
4. Drawings must accompany orders for specials where applicable.
5. Made to "X" tolerance unless specified.
6. See page 3 for explanation of Short & Long form Certifications.

Reversible Thread Plug Gages

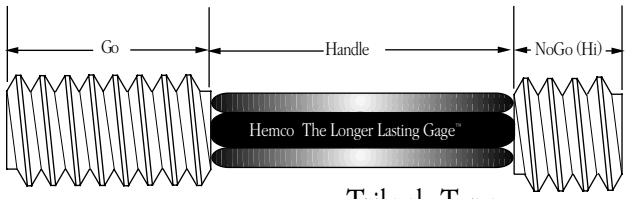
HemcoChrome Process

Fractional Inch and Metric Ranges

- ❑ All gages are made to ANSI Std. B47.1 and Screw Thread Standards for Federal services: Fed. Std. H28 and ANSI Std. B1.2.
- ❑ Go members sizes .190 or #10 and larger have a chip groove.
- ❑ The feature of Reversible gages is that when one end becomes worn or damaged, the gage member can be reversed providing a new gage.
- ❑ Exceptional value, essentially two gage members for the price of one.



Wire Type



Trilock Type

Nominal Range						Style	Go Length			NoGo (HI) Length	Handle No.	Handle Length	Width Across Flat of Handle
Number or Fractional Size		Decimal Range		Metric Range			7 pitch & coarser.	8 pitch thru 12 pitch.	13 pitch & finer.				
From	To and including	From	To and including	From	To and including					All Pitches			
#0	#1	.030	.075	.76mm	1.91mm	Wire Type	1/2	1/2	1/2	1/2	1W	2-1/4	1/4
#2	#5	.075	.130	1.90mm	3.30mm	Wire Type	5/8	5/8	5/8	5/8	2W	2-11/16	3/8
#6	#8	.130	.180	3.30mm	4.57mm	Wire Type	3/4	3/4	3/4	3/4	2W	2-11/16	3/8
#10	1/4	.180	.281	4.57mm	7.14mm	Wire Type	7/8	7/8	7/8	7/8	3W	3-5/16	9/16
1/4	5/16	.281	.320	7.14mm	8.13mm	Wire Type	1	1	1	1	4W	3-9/16	11/16
5/16	3/8	.320	.406	8.13mm	10.31mm	Wire Type	1-1/8	1-1/8	1-1/8	1-1/8	4W	3-9/16	11/16
3/8	7/16	.406	.450	10.31mm	11.43mm	Wire Type	1-1/8	1-1/8	1-1/4	1-Σ	5W	4-1/4	13/16
7/16	1/2	.450	.510	11.43mm	12.95mm	Wire Type	1-3/8	1-3/8	1-3/8	1-3/8	5W	4-1/4	13/16
1/2	5/8	.510	.635	12.95mm	16.13mm	Wire Type	1-1/2	1-1/2	1-1/2	1-3/8	6W	4-1/2	15/16
5/8	3/4	.635	.760	16.13mm	19.30mm	Wire Type	1-3/4	1-3/4	1-3/4	1-3/8	7W	4-1/2	1-1/16
3/4	15/16	.760	.947	19.30mm	24.05mm	Trilock	1-1/4	1	1	3/4	2-μ	4	1/2
15/16	1-1/8	.947	1.135	24.05mm	28.83mm	Trilock	1-3/8	1-1/8	1	3/4	3-μ	4	5/8
1-1/8	1-1/2	1.135	1.510	28.83mm	38.35mm	Trilock	1-1/2	1-Σ	1	3/4	4-μ	4	13/16
From	To and including	From	To and including	From	To and including	Style	7 Pitch & Coarser	8 Pitch thru 15 Pitch	16 Pitch & Finer	NoGo (HI) length All Pitches	Handle No.	Handle Length	Width Across Flat of Handle
1-1/2	2	1.510	2.010	38.35mm	51.05mm	Trilock	1-7/8	1-1/4	7/8	7/8	5-1/2	4-1/2	1
2	2-1/2	2.010	2.510	51.05mm	63.75mm	Trilock	2	1-3/8	7/8	7/8	6	5	1-1/8
2-1/2	3	2.510	3.010	63.75mm	76.45mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
3	3-1/2	3.010	3.510	76.45mm	89.15mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
3-1/2	4	3.510	4.010	89.15mm	101.85mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
4	4-1/2	4.010	4.510	101.85mm	114.55mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
4-1/2	5	4.510	5.010	114.55mm	127.25mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
5	8	5.010	8.010	127.25mm	203.45mm	Trilock	2-1/8	1-1/2	1	1	7	6	1-1/4
8	12	8.010	12.010	203.45mm	305.05mm	Annular	2-1/4	1-1/2	1	1		Ball type	

Reversible	Qty.	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options	
			Series		Class	Condition	Handles	Type	Tolerance	Certifications		
			UNC UNF UNEF UNS	Acme Buttress Mod. Acme Mod. Buttress British Whitworth DIN/JIS	1, 1B 2, 2B 3, 3B 2C, 3C 2G, 3G	Go NoGo (HI)	Member Only (MO). Single End w/ Handle. Double End w/ Handle.	Reversible	"X" "W"	Short Form Long Form		Extended Lead. 90°threads. Multi-Lead. Steel Only. Left Hand.	Special Colored Handles. Special Length. Marking Instructions. Certifications.
Example	1	3/8-16	UNC		2B	HI	MO	Rev		Long Form	.3401		
								Note 1	Note 5	Note 6	Note 2	Note 4	

Notes.

1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. For Standard Pitch Diameters, consult charts on pages 19 & 20.
3. Specify if you wish to have rings set to master setting plugs.
4. Drawings must accompany orders for specials where applicable.
5. Made to "X" tolerance unless specified.
6. See page 3 for explanation of Short & Long form Certifications.

American Petroleum Institute
Working & Master Gages

HEMCO

American Petroleum Institute

Spec 5B
Spec 7
Spec 11AX
Spec 11B

The American Petroleum Institute (A.P.I.) established a tightly controlled gaging program to insure that the A.P.I. thread form specifications are met in the manufacturing of oil field equipment, tools and pipe. A.P.I. requires that those manufacturers using the A.P.I. monogram inspect these components with working gages set to A.P.I. master gages. HEMCO is certified by the Institute to use the A.P.I. seal on all the oil country master gages we manufacture.

HemcoChrome Process:

- Increases wear life 4 or more times.
- Stops corrosion by salt spray and high humidity.

Application	Nominal Size		T.P.I.
	From	To	
Casing - Buttress	4-1/2	13-3/8	5
Casing - Round	4-1/2	13-3/8	8
Line Pipe	1/8	12	8 to 27
Tubing - Non Upset	1.050	3-1/2	10
Tubing - Non Upset	4	4-1/2	8
Tubing - External Upset	1.050	1.900	10
Tubing - Buttress	2-3/8	4-1/2	8
Tubing - External Upset	2-3/8	3-1/2	8
Rotary Tool Joint: Regular	2-3/8	4-1/2	5
Regular	5-1/2	8-5/8	4
Full Hole	3-1/2	4-1/2	5
Full Hole	4, 5-1/2	& 6-5/8	4
Internal Flush	2 - 3-5/8	5-1/2	4
Extra Hole	2-7/8	5	4
Sucker Rods P1 to P8	1/2	1-1/8	10
B1 to B6	1/2	1-1/8	10

Standard Sizes Available In: ❖ Cable Drilling ❖ Tool Joint and Standard Rotary ❖ Shouldered Connections

Setting Thread Rings

Evaluation of and procedure for setting thread ring gages to master setting plugs.

1. Thoroughly clean, inspect for nicks or damage and calibrate the master setting plug. The master should be straight or have back taper, no front taper, and be in tolerance. Lubricate the master with a thin film of light oil.

2. Thoroughly clean the thread ring gage and inspect for nicks. Remove the sealing wax with a small pointed knife. Turn the locking screw counter clockwise until it is loose. Turn the adjusting screw clockwise, opening the ring until the master freely enters. In some cases a small screwdriver should be levered into the adjustment slot area to facilitate opening the ring as you turn the adjustment screw.

3. Turn the ring gage onto the master plug's full form section with no more than one thread of the ring gage beyond the last thread of the master. (Figure 1)

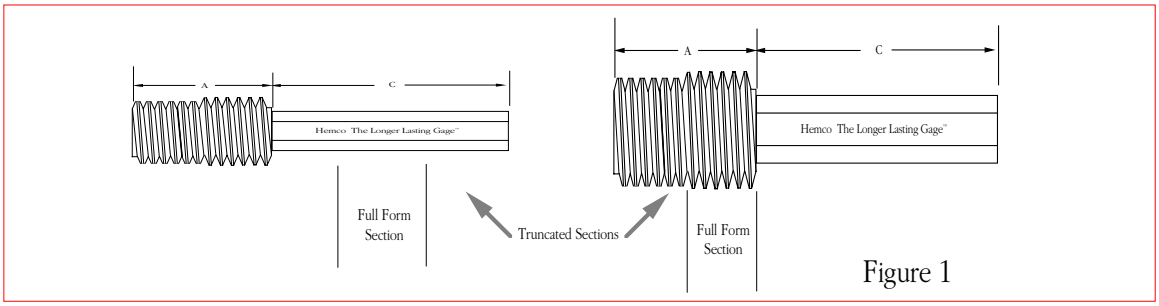


Figure 1

4. Turn the adjustment screw counter clockwise. Now rotate ring on master plug until there is a slight drag between them. Tighten the locking screw. The ring should exhibit a larger degree of drag or snug fit to the master. This operation may have to be repeated to obtain the proper degree of drag. The degree of drag is somewhat subjective, particularly with regards to the size and pitch of the gage and where the master is found to be in its tolerance. Generally smaller rings and those set to masters near the low limit would require less drag than larger rings or rings set to masters on the high limit. **(See note below.)

5. After adjusting and with set plug still inserted, the ring should be tapped with a brass or plastic hammer to fully seat the ring to the master. The drag after doing this should feel the same as before. If not, the ring was not properly seated. Repeat Step 4.

6. Next step is to turn the ring gage to the truncated portion at the front half of the master. (Figure 1) The drag should be essentially the same. There should be no shake or play. If there is, the ring has lost its root relief or its flank angles are worn out of tolerance and the ring should be reworked or replaced under Hemco's Gage Saver Service. (see page 4) Remove the ring from the master.

7. To test the ring gage for taper or bell mouth, turn the ring onto the truncated portion of the master plug 1-1/2 to 2 turns. You should detect some drag. Continue turning the ring onto the master noting any definite difference in the degree of drag. This indicates an unacceptable bell mouth or taper condition. Remove the set plug and follow the above procedure for the other side of the ring. The fit should be about the same on both sides. If the ring is bell mouthed or tapered, it should be reworked or replaced under Hemco's Gage Saver Service. (see page 3)

8. The minor diameter of the ring can be measured with an internal measuring machine or Go and NotGo X-tolerance plain plug gages. The minor diameter of the ring is in tolerance if the Go plug enters and the NotGo does not.

9. It is strongly recommended that once the ring gage has passed all the above, the locking and adjustment screw holes be filled with sealing wax to prevent any tampering.

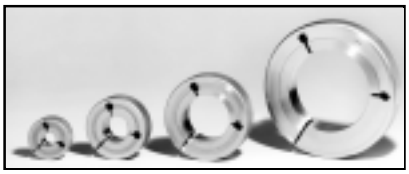
10. You are now ready to place the ring gage into service.

** *Note: A thread ring gage setting is unique to the particular setting plug the ring is set to and cannot be expected to be duplicated on any other setting plug without re-adjustment. This is because of differences in allowable gagemaker's tolerances on lead, angles and pitch diameter.*

Thread Ring & Setting Plug Gages

HEMCO

- ❏ HemcoChrome Process on thread rings, set plugs are 0-1 tool steel unless otherwise specified.
- ❏ All gages are made to ANSI B47.1 and Screw Thread Standards for Federal Services: Federal Std. H28 and ANSI B1.2.
- ❏ All thread ring gages are root relieved for adjustability and longer life. NoGo rings are identified by a groove around the outside diameter.
- ❏ Setting plugs should be ordered at the same time as ring gages to assure perfect adjustment and provide for inspection of rings once in use.
- ❏ Set plugs are built to "X" tolerance on pitch diameter "W" tolerance on lead and flank angles standard.
- ❏ "W" tolerance on pitch diameter is optional and must be specified.



Standard Inch Nominal Range		Metric Nominal Range		Set Plug Dimensions (refer to Figure 1 on page 11)				Ring Dimensions			
Above	To and Including	Above	To and Including	Style	For Thin Ring "A" Dim.	For Thick Ring "A" Dim.	Handle Size	Ring Size	Ring Outside Dia.	Thin Ring Width	Thick Ring Width
.059	.090	1.50	2.29	Taperlock	7/32	-	000	1-T	1	1/4	-
.090	.105	2.29	2.67	Taperlock	3/8	-	000	1-T	1	1/4	-
.105	.150	2.67	3.81	Taperlock	3/8	-	00	1-T	1	1/4	-
.150	.230	3.81	5.84	Taperlock	13/32	-	0	1-T	1	1/4	-
.230	.365	5.84	9.27	Taperlock	3/4	-	1	2-T	1-3/8	11/32	-
.365	.510	9.27	12.95	Taperlock	1	-	2	3-T	1-3/4	7/16	-
.510	.825	12.95	20.96	Taperlock	1-1/4	1-7/8	3	4-T	2-3/16	9/16	3/4
.825	1.135	20.96	28.83	Taperlock	1-1/2	2-1/8	4	5-T	2-5/8	11/16	15/16
1.135	1.510	28.83	38.35	Taperlock	1-5/8	2-3/8	5	6-T	3-1/4	3/4	1-1/8
1.510	2.010	38.35	51.05	Trilock	1-7/8	2-7/8	5 1/2	7-T	3-3/4	13/16	1-1/4
2.010	2.510	51.05	63.75	Trilock	2	3	6	8-T	4-1/2	7/8	1-5/16
2.510	3.010	63.75	76.45	Trilock	2	3-1/8	7	9-T	5	7/8	1-3/8
3.010	3.510	76.45	89.15	Trilock	2	3-1/8	7	10-T	5-1/2	15/16	1-7/16
3.510	4.010	89.15	101.85	Trilock	2-1/8	3-1/4	7	11-T	6-3/8	15/16	1-1/2
4.010	4.510	101.85	114.55	Trilock	2-1/8	3-1/4	7	12-T	7-1/4	1	1-1/2
4.510	5.010	114.55	127.25	Trilock	2-1/8	3-1/4	7	13-T	8-1/4	1	1-1/2
5.010	5.510	127.25	139.95	Trilock	2-1/8	3-1/4	7	14-T	9-1/4	1	1-1/2
5.510	6.010	139.95	152.65	Trilock	2-1/8	3-1/4	7	14-T	9-1/4	1	1-1/2
6.010	6.510	152.65	165.35	Trilock	2-1/8	3-1/4	7	15-T	10-1/4	1	1-1/2
6.510	7.010	159.00	178.05	Trilock	2-1/8	3-1/4	7	15-T	10-1/4	1	1-1/2
7.010	7.760	178.05	197.10	Trilock	2-1/8	3-1/4	7	16-T	11-1/4	1	1-1/2
7.760	8.510	197.10	216.15	Annular	2-1/8	3-1/4	Ball	17-T	12-1/4	1	1-1/2
8.510	9.260	216.15	235.20	Annular	2-1/8	3-1/4	Ball	18-T	13-1/4	1	1-1/2
9.260	10.010	235.20	254.25	Annular	2-1/8	3-1/4	Ball	19-T	14-1/4	1	1-1/2
10.010	10.760	254.25	273.30	Annular	2-1/8	3-1/4	Ball	20-T	15-1/4	1	1-1/2
10.760	11.510	273.30	292.35	Annular	2-1/8	3-1/4	Ball	21-T	16-1/4	1	1-1/2
11.510	12.260	292.35	311.40	Annular	2-1/8	3-1/4	Ball	22-T	17-1/4	1	1-1/2

Thread Rings & Master Setting Plugs.	Qty.	Nominal Size & T.P.I.	Select One: Series		Class	Condition	Tolerance	Certifications	Pitch Diameter	Ring Options	Set Plug Options
			UNC UNF UNEF UNS UNJ	Acme Buttress Mod. Acme Mod. Buttress British Whitworth DIN/JIS	1, 1A 2, 2A 3, 3A 2C, 3C 2G, 3G	Go or NoGo (Lo)	"X" "W"	Short Form Long Form		Solid Rings. Left Hand. Pre-plate. Steel only. Multi-Lead. Holders.	Left Hand. Pre-Plates. Multi-Lead. Hi-Lo. Handles.
Example	1	3/8-16	UNC		2A	Go		Long Form	.3331		
							Note 5	Note 6	Note 2	Note 4	Note 4

Notes: 1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. For Standard Pitch Diameters, consult charts on page19 & 20.
3. Specify if you wish to have rings set to master setting plugs.
4. Drawings must accompany orders for specials where applicable.
5. Made to "X" tolerance unless specified.
6. See Page 3 for explanation of Short & Long Form Certifications.

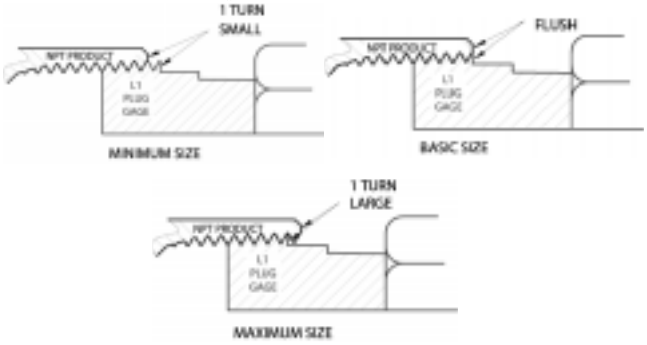
NPT - National Pipe Taper

Reference ANSI/ASME B1.20.1-1983

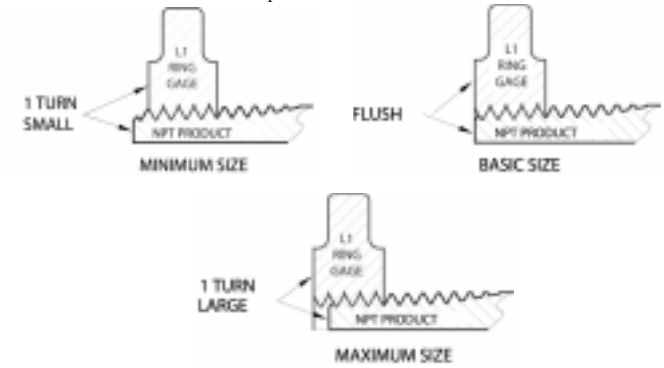
NPT tapered threads require the inspection of the L1 portion of the product threads with a plug or ring gage. The proper use of these gages include:

- ❒ Maintaining calibrated clean and undamaged gages.
- ❒ Making sure the product thread is clean and free of burrs.
- ❒ The gage is to be applied to the product with HAND TIGHT engagement.

- ❒ To establish functional size of the internal thread the L1 plug is to have it's gaging notch flush to plus or minus one turn from the face of the part.



- ❒ To establish the functional size of the external thread, the L1 ring is to have it's small end face flush to plus or minus one turn from the face of the part.



- ❒ Where a product internal or external has a chamfer extending beyond the thread, the acceptable practice is to establish the reference plane at the vanishing point of the thread. This along with the proper control of the tool configuration, sound manufacturing practices and visual inspection will assure the products thread conforms to it's design.

Optional gaging includes: Plug and Ring gages with 3 gaging planes representing the Basic, Min and Max sizes. Also plain tapered gages for the major and minor diameters. Calibration consists of the use of a master plug and ring to assure gage uniformity.

NPT Basic Dimensions					
Nominal & TPI	1 Pitch	Length L1	Major Dia. Of plug gage at gaging notch (E1) plane.	P.D. of plug & ring gage at gaging notch (E1) plane.	Minor Dia. Of ring gage at gaging notch (E1) plane.
1/16-27	.03704	.1600	.30289	.28118	0.25947
1/8-27	.03704	.1615	.39531	.37360	0.35189
1/4-18	.05556	.2278	.52763	.49163	0.45563
3/8-18	.05556	.2400	.66301	.62701	0.59101
1/2-14	.07143	.3200	.82600	.77843	0.73086
3/4-14	.07143	.3390	1.03644	.98887	0.94129
1-11-1/2	.08696	.4000	1.29654	1.23863	1.18072
1-1/4-11-1/2	.08696	.4200	1.64129	1.58338	1.52547
1-1/2-11-1/2	.08696	.4200	1.88025	1.82234	1.76442
2-11-1/2	.08696	.4360	2.35418	2.29627	2.23836
2-1/2-8	.12500	.6820	2.84541	2.76216	2.67891
3-8	.12500	.7660	3.47175	3.38850	3.30525
3-1/2-8	.12500	.8210	3.97207	3.88881	3.80556
4-8	.12500	.8440	4.47038	4.38712	4.30387
5-8	.12500	.9370	5.53255	5.44929	5.36604
6-8	.12500	.9580	6.58922	6.50597	6.42272

Type of Thread	Internal Product Threads	External Product Threads
PTF SAE Short	PTF SAE Short L1 & L3 Plug Gages	PTF SAE Short L1 & L2 Ring Gages
ANPT	ANPT L1, L3 & Plain 6-Step Plug Gages	ANPT L1, L2 & Plain 6-Step Ring Gages
NPSF	PTF SAE Short L1 Plug	Mates with NPTF External Threads
NPSM	Go & NotGo Plug Gages	Go & NotGo Ring Gages
NPSL	Go & NotGo Plug Gages	Go & NotGo Ring Gages
NH	Go & NotGo Plug Gages	Go & NotGo Ring Gages
NPSH	Go & NotGo Plug Gages	Go & NotGo Ring Gages
NPSC	NPT L1 Plug Gage	Mates with NPT External Threads
BSPT System A	BSPT Thread Plug	BSPT Thread Ring
BSPT System B	BSPT Thread Plug & Plain Plug	BSPT Thread Ring & Plain Ring
BSPP	Go & NotGo Plug Gages	Go & NotGo Ring Gages

JIS (Japanese) & DIN (German) Parallel and Tapered Pipe Thread Gages are also available.

BSPT Pitch Diameters		
Size	English Pitch Dia.	Metric Pitch Dia.
1/16-28	.28118	7.142
1/8-28	.36012	9.147
1/4-19	.48429	12.301
3/8-19	.62228	15.806
1/2-14	.77925	19.793
3/4-14	.99524	25.279
1-11	1.25079	31.770
1-1/4-11	1.59177	40.431
1-1/2-11	1.82378	46.324
2-22	2.28878	58.135
2-1/2-11	2.90177	73.705
3-11	3.40177	86.405
4-11	4.39177	111.551
5-11	5.39177	136.951
6-11	6.39177	162.351

NPSF Pitch Diameters		
Size	Go	NotGo
1/16-27	.2768	.3803
1/8-27	.3692	.3727
1/4-18	.4852	.4904
3/8-18	.6205	.6257
1/2-14	.7700	.7767
3/4-14	.9805	.9872
1"-11-1/2	1.2284	1.2365
1-1/4-11-1/2	1.5760	1.5814

B1.20.5 Specifically states that "Go & NotGo Straight Gages are not recommended for size acceptance"

BSPP Plugs				
SIZE	GO PD	GO PD	HI PD	HI PD
1/8-28	.36024	9.150	.36472	9.264
1/4-19	.48441	12.304	.48961	12.436
3/8-19	.62240	15.809	.62760	15.941
1/2-14	.77953	19.800	.78531	19.947
3/4-14	.99551	25.286	1.00130	25.433
1-11	1.25106	31.777	1.25835	31.962
1-1/4-11	1.59205	40.438	1.59933	40.623
1-1/2-11	1.82406	46.331	1.83134	46.516
2-11	2.28906	58.142	2.29634	58.327
2-1/2-11	2.90220	73.716	2.91091	73.937
3-11	3.40220	86.416	3.41091	86.637

Min/Max P.D. Limits of Product are different per BS2779:1986

NPSM Thread Plugs		
Size	Go P.D.	HI P.D.
1/8-27 NPSM	.3736	.3783
1/4-18 NPSM	.4916	.4974
3/8-18 NPSM	.6270	.6329
1/2-14 NPSM	.7784	.7851
3/4-14 NPSM	.9889	.9958
1"-11-1/2 NPSM	1.2386	1.2462
1-1/4-11-1/2 NPSM	1.5834	1.5912
1-1/2-11-1/2 NPSM	1.8223	1.8302
2"-11-1/2	2.2963	2.3044
2-1/2-8 NPSM	2.7622	2.7720
3"-8 NPSM	3.3885	3.3984
3 1/2-8 NPSM	3.8888	3.8988
4"-8 NPSM	4.3871	4.3971
5"-8 NPSM	5.4493	5.5498
6"-8 NPSM	6.5060	6.5165

Function & Use of Dryseal Gaging

HEMCO

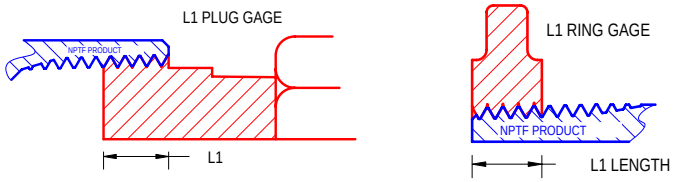
The principle of producing a Dryseal thread is based on obtaining crest and root contact at hand-tight engagement, both at the major and minor diameters.

NPTF Thread Gaging ASME B1.20.5-1991

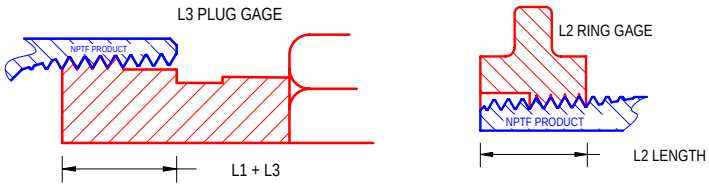
NPTF Class 1 gaging system uses L1 & L3 thread plug gages to gage the internal thread, L1 & L2 ring gages to gage the external threads and plain 6-step Plugs & Rings to check the crest of the threads. The root of the threads are controlled with proper tooling.
NPTF Class 2 gaging system uses L1, L2, & L3 thread gages, with the use of crest and root check gages to gage the major and minor diameter of the product.

Use and Coordination of Gages.

1. L1 Plug & Ring gage the functional size of the portion of the products thread that comes in contact with its mating part at hand-tight engagement.

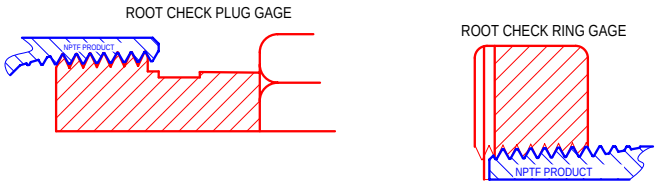


2. L3 Plug & L2 Ring gages the functional size of the portion of the products thread which is provided for wrench tight makeup beyond the L1 thread, and when used in relation to the L1 gage provides an indication of taper and length of functional thread.



3. Crest Check Plug & Ring gages the minor diameter of the internal thread and major diameter of the external thread (crest truncation) and is used in relation to the L1 plug or ring.

4. Root Check Plug & Ring gages the major diameter of the internal thread and minor diameter of the external thread (root truncation) and is used in relation to the L1 plug or ring.



Coordination of Gaging

1. The L1 plug or ring gage is used to establish size. The tolerance is plus or minus one turn from the face of the product.
   Threads should be classified in the following manner:

Internal threads:		External threads:	
Minimum size =	out 1 turn	Minimum size =	in 1 turn
Basic size =	at the notch	Basic size =	at the face
Maximum =	in 1 turn	Maximum =	out 1 turn

2. The L2 or L3 gage is a relationship gage and when assembled may not vary more than plus or minus 1/2 a turn from the position established by the L1 gage.
3. The crest and root check gages are also relationship gages with 6 steps, and when assembled must fall between 2 steps marked minimum (MN MNT), basic (B BT), maximum (MX MXT) as indicated by the position established by the L1 gage.

Proper Use and Care:

- ❒ Maintain calibrated clean and undamaged gages.
- ❒ Making sure the product's thread is clean and free of burrs prior to gaging.
- ❒ In all cases the gage is to be applied to the product with HAND TIGHT engagement.

These precautions along with proper control of the tool configuration, sound manufacturing practices and visual inspection will provide an acceptable self-sealing thread.

ANPT Aeronautical National Taper Pipe SAE-AS71051

ANPT Gaging system uses L1, L2, & L3 thread gages, and 6 step crest check gages to gage the major and minor diameter of the product.
The process of gaging ANPT threads is basically the same as the NPTF system.

Calibration of NPTF / ANPT gages require the use of a master plug and ring to check for gage wear.
However tapered plugs used to gage NPSF / NPSI which are straight threads and receive uneven wear and it is recommend that a single element check be performed for these gages.

Basic Specifications for NPTF L1 & L3 Plugs

Nominal & TPI	1 Pitch	Basic Dimensions for NPTF-L1 Plug Gages			Basic Dimensions for NPTF-L3 Plug Gages		
		Length L1	Plug Gage Pitch Dia. @ G.P. (E1) Plane.	Plug Gage Major Dia. @ G.P. (E1) Plane	Length (L1 + L3)	Plug Gage Pitch Dia @ G.P. Basic Step	Plug Gage Major Dia. @ S.E. Basic Step
1/16-27	.03704	.1600	.28118	.30289	.27110	.2811	.2984
1/8-27	.03704	.1615	.37360	.39531	.27260	.3736	.3908
1/4-18	.05556	.2278	.49163	.52763	.39450	.4917	.5175
3/8-18	.05556	.2400	.62701	.66301	.40670	.6270	.6529
1/2-14	.07143	.3200	.77843	.82815	.53430	.7785	.8117
3/4-14	.07143	.3390	.98887	1.03859	.55330	.9889	1.0222
1-11-1/2	.08696	.4000	1.23863	1.29829	.66090	1.2386	1.2792
1-1/4-11-1/2	.08696	.4200	1.58338	1.64304	.68090	1.5834	1.6240
1-1/2-11-1/2	.08696	.4200	1.82234	1.88200	.68090	1.8224	1.8629
2-11-1/2	.08696	.4360	2.29627	2.35593	.69690	2.2963	2.3368
2-1/2-8	.12500	.6820	2.76216	2.85141	1.05700	2.7622	2.8204
3-8	.12500	.7660	3.38850	3.47775	1.14100	3.3885	3.4467

Basic Specifications for NPTF L1 & L2 Rings

Nominal & TPI	1 Pitch	Basic Dimensions for NPTF-L1 Ring Gages			Basic Dimensions for NPTF-L2 Ring Gages		
		Length L1	Ring Gage Pitch Dia. @ G.P. (E1) Plane.	Ring Gage Minor Dia. @ G.P. (E1) Plane	Length L2	Ring Gage Pitch Dia @ L.E. (E2) Plane	Ring Gage Minor Dia. @ L.E. (E2) Plane
1/16-27	.03704	.1600	.28118	.25947	.26113	.28750	0.27024
1/8-27	.03704	.1615	.37360	.35189	.26385	.38000	0.36274
1/4-18	.05556	.2278	.49163	.45563	.40178	.50250	0.47661
3/8-18	.05556	.2400	.62701	.59101	.40778	.63750	0.61161
1/2-14	.07143	.3200	.77843	.72871	.53371	.79179	0.7585
3/4-14	.07143	.3390	.98887	.93915	.54571	1.00179	0.9685
1-11-1/2	.08696	.4000	1.23863	1.17897	.68278	1.25630	1.21577
1-1/4-11-1/2	.08696	.4200	1.58338	1.52372	.70678	1.60130	1.56077
1-1/2-11-1/2	.08696	.4200	1.82234	1.76268	.72348	1.84130	1.80077
2-11-1/2	.08696	.4360	2.29627	2.23661	.75652	2.31630	2.27577
2-1/2-8	.12500	.6820	2.76216	2.67291	1.13750	2.79062	2.73237
3-8	.12500	.7660	3.38850	3.29925	1.20000	3.41562	3.35737

(STI) Screw Thread Insert Plug Gages

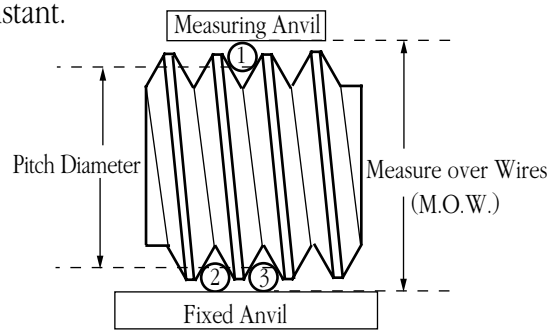
Screw Thread Insert Plug Gages, Go and NoGo, are specified whenever a wire insert is used to repair a damaged thread or provide for a stronger thread to mating thread application. These gages are designed to check the oversize thread condition needed to allow the wire insert to maintain a standard pitch diameter after insertion.

STI (Screw Thread Insert) Gages			
#2-56 UNC	#8-32 UNC	5/16-18 UNC	1/2-20 UNF
#3-48 UNC	#8-36 UNF	5/16-24 UNF	9/16-12 UNC
#4-40 UNC	#10-24 UNC	3/8-16 UNC	9/16-18 UNF
#4-48 UNC	#10-32 UNF	3/8-24 UNF	5/8-11 UNC
#5-40 UNC	#12-24 UNC	7/16-14 UNC	5/8-18 UNF
#6-32 UNC	1/4-20 UNC	7/16-20 UNF	3/4-10 UNC
#6-40 UNF	1/4-28 UNF	1/2-13 UNC	3/4-16 UNF

Thread Measuring Wires

- ❑ Calibrated Thread Wires for 60° Threads
- ❑ Packaged as a set with a slip identifying their measuring constant.

The most accurate and universally recognized method of obtaining pitch diameter measurements of thread plug or setting plug gages is by means of using 3 hardened steel measuring wires laid into opposite sides of the thread, as shown in the diagram. Precise measurements with proper pressures over these wires minus the appropriate constant equals the measured pitch diameter.



Unified & American 60° - Standard Sizes - Steel							
Threads Per Inch	Nominal Best Wire Size	Threads Per Inch	Nominal Best Wire Size	Threads Per Inch	Nominal Best Wire Size	Threads Per Inch	Nominal Best Wire Size
120	.00481	40	.01443	16	.03608	6	.09623
100	.00577	36	.01604	14	.04124	5-1/2	.10497
96	.00601	32	.01804	13	.04441	5	.11547
90	.00642	30	.01925	12	.04811	4-1/2	.12830
80	.00722	28	.02062	11-1/2	.05020	4	.14434
72	.00802	27	.02138	11	.05249	3-1/2	.16496
64	.00902	26	.02221	10	.05774	3	.17765
56	.01031	24	.02406	9	.06415	3	.19245
50	.01155	22	.02624	8	.07217	2-3/4	.20995
48	.01203	20	.02887	7-1/2	.07698	2-1/2	.23094
44	.01312	18	.03208	7	.08248	2	.28868
Metric 60° - Standard sizes - Steel							
Pitch MM	Nominal Best Wire Size	Pitch MM	Nominal Best Wire Size	Pitch MM	Nominal Best Wire Size	Pitch MM	Nominal Best Wire Size
.2	.1155	.6	.3464	1.5	.8660	4.5	2.5981
.225	.1299	.7	.4041	1.75	1.0104	5.0	2.8868
.25	.1443	.75	.4330	2.0	1.1547	5.5	3.1754
.3	.1732	.8	.4619	2.5	1.4434	6.0	3.4641
.35	.2021	.9	.5196	3.0	1.7321	7.0	4.0415
.4	.2309	1.0	.5774	3.5	2.0207	8.0	4.6188
.45	.2598	1.25	.7217	4.0	2.3094	9.0	5.1962
.5	.2887					10	5.7735

Thread Gage Tolerances

X Tolerance

Pitch Diameter					Major & Minor		Half Angle	Lead
Threads per Inch	To & Inc. 1-1/2"	Above 1-1/2" to 4"	Above 4" to 8"	Above 8" to 12"	To 4" Incl.	Above 4"	Tol +/-	Tol +/-
80	.0002				.0003		30	.0002
72	.0002				.0003		30	.0002
64	.0002				.0004		30	.0002
56	.0002	.0003			.0004		30	.0002
48	.0002	.0003			.0004		30	.0002
44	.0002	.0003			.0004		20	.0002
40	.0002	.0003			.0004		20	.0002
36	.0002	.0003			.0004		20	.0002
32	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003
28	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003
27	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003
24	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003
20	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003
18	.0003	.0004	.0005	.0006	.0005	.0007	10	.0003
16	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
14	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
13	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
12	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
11.5	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
11	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
10	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003
9	.0003	.0004	.0006	.0008	.0007	.0011	10	.0003
8	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004
7	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004
6	.0004	.0005	.0006	.0008	.0008	.0013	5	.0004
5		.0005	.0006	.0008	.0008	.0013	5	.0004
4.5		.0005	.0006	.0008	.0008	.0013	5	.0004
4		.0005	.0006	.0008	.0009	.0015	5	.0004

W Tolerance

Pitch Diameter						Major & Minor			Half Angle	Lead	
Threads per Inch	To & Incl. 1/2"	Above 1/2" to 1-1/2"	Above 1-1/2" to 4"	Above 4" to 8"	Above 8" to 12"	To & Incl. 1/2"	Above 1/2" to 4"	Above 4"	Tol +/-	To & Incl. 1/2" tol +/-	Above 1/2" tol +/-
80	.0001	.00015				.0003	.0003		20	.0001	.00015
72	.0001	.00015				.0003	.0003		20	.0001	.00015
64	.0001	.00015				.0003	.0004		20	.0001	.00015
56	.0001	.00015	.0002			.0003	.0004		20	.0001	.00015
48	.0001	.00015	.0002			.0003	.0004		18	.0001	.00015
44	.0001	.00015	.0002			.0003	.0004		15	.0001	.00015
40	.0001	.00015	.0002			.0003	.0004		15	.0001	.00015
36	.0001	.00015	.0002			.0003	.0004		12	.0001	.00015
32	.0001	.00015	.0002	.00025	.0003	.0003	.0005	.0007	12	.0001	.00015
28	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
27	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
24	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
20	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
18	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
16	.0001	.0002	.00025	.0003	.0004	.0006	.0006	.0009	8	.00015	.00015
14	.0015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
13	.0015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
12	.0015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
11.5	.0015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
11	.0015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
10		.0002	.00025	.0003	.0004		.0006	.0009	6		.00025
9		.0002	.00025	.0003	.0004		.0007	.0011	6		.00025
8		.0002	.00025	.0003	.0004		.0007	.0011	5		.00025
7		.0002	.00025	.0003	.0004		.0007	.0011	5		.0003
6		.0002	.00025	.0003	.0004		.0008	.0013	5		.0003
5			.00025	.0003	.0004		.0008	.0013	4		.0003
4.5			.00025	.0003	.0004		.0008	.0013	4		.0003
4			.00025	.0003	.0004		.0009	.0015	4		.0003

Cylindrical Gage Tolerances

Size Range Inches		Size Range MM		Gagemaker's Tolerances				
Above	To and Including	Above	To and Including	XX Tolerance	X Tolerance	Y Tolerance	Z Tolerance	ZZ Tolerance
.016	.825	.40	20.95	.00002	.00004	.00007	.00010	.00020
.825	1.510	20.95	38.35	.00003	.00006	.00009	.00012	.00024
1.510	2.510	38.35	63.75	.00004	.00008	.00012	.00016	.00032
2.510	4.510	63.75	114.55	.00005	.00010	.00015	.00020	.00040
4.510	6.510	114.55	165.35	.00007	.00013	.00019	.00025	.00050
6.510	9.010	165.35	228.85	.00008	.00016	.00024	.00032	.00064
9.010	12.010	228.85	305.05	.00010	.00020	.00030	.00040	.00080

Direction of Tolerances

Cylindrical Rings:: Go: Minus Tolerance
Notgo: Plus Tolerance
Master: Bilateral,
(1/2 Plus, 1/2 Minus)

Cylindrical Plugs: Go: Plus Tolerance
Notgo: Minus Tolerance

Master Disc's: Bilateral, (1/2 Plus, 1/2 Minus)

What class of gage is right for a particular job? A good rule of thumb is to use gages that are accurate to 10% of the manufacturing tolerance. Typically, 1/2 of the 10% is applied to the Go gage, the other 1/2 is applied to the NoGo gage. Example: A part under .825" has a tolerance of .002". When using Go and NoGo gages each gage should be accurate to at least .0001", or a Class Z Gagemaker's Tolerance. Many Quality Control Technicians use a gage which is one class better than the 10% rule. ▲

Standard Inch Pitch Diameters:

Basic, 2B, 3B, 2A & 3A

HEMCO

Standard Inch Pitch Diameters										
No. or Fraction	Decimal Size	T.P.I.		Work Plugs Class			Rings & Setting Plugs Class			
				Go Basic	2B Hl	3B Hl	2, 3 & 3A Go	3A Lo	1A & 2A Go	2A Lo
#0	.0600	80	UNF	.0519	.0542	.0536	.0519	.0506	.0514	.0496
#1	.0730	64	UNC	.0629	.0655	.0648	.0629	.0614	.0623	.0603
		72	UNF	.0640	.0665	.0659	.0640	.0626	.0634	.0615
#2	.0860	56	UNC	.0744	.0772	.0765	.0744	.0728	.0738	.0717
		64	UNF	.0759	.0786	.0779	.0759	.0744	.0753	.0733
#3	.0990	48	UNC	.0855	.0885	.0877	.0855	.0838	.0848	.0825
		56	UNF	.0874	.0902	.0895	.0874	.0858	.0867	.0845
#4	.1120	40	UNC	.0958	.0991	.0982	.0958	.0939	.0950	.0925
		48	UNF	.0985	.1016	.1008	.0985	.0967	.0978	.0954
#5	.1250	40	UNC	.1088	.1121	.1113	.1088	.1069	.1080	.1054
		44	UNF	.1102	.1134	.1126	.1102	.1083	.1095	.1070
#6	.1380	32	UNC	.1177	.1214	.1204	.1177	.1156	.1169	.1141
		40	UNF	.1218	.1252	.1243	.1218	.1198	.1210	.1184
#8	.1640	32	UNC	.1437	.1475	.1465	.1437	.1415	.1428	.1399
		36	UNF	.1460	.1496	.1487	.1460	.1439	.1452	.1424
#10	.1900	24	UNC	.1629	.1672	.1661	.1629	.1604	.1619	.1586
		32	UNF	.1697	.1736	.1726	.1697	.1674	.1688	.1658
#12	.2160	24	UNC	.1889	.1933	.1922	.1889	.1863	.1879	.1845
		28	UNF	.1928	.1970	.1959	.1928	.1904	.1918	.1886
		32	UNEF	.1957	.1998	.1988	.1957	.1933	.1948	.1917
1/ 4	.2500	20	UNC	.2175	.2224	.2211	.2175	.2147	.2164	.2127
		28	UNF	.2268	.2311	.2300	.2268	.2243	.2258	.2225
		32	UNEF	.2297	.2339	.2328	.2297	.2273	.2287	.2255
5/16	.3125	18	UNC	.2764	.2817	.2803	.2764	.2734	.2752	.2712
		24	UNF	.2854	.2902	.2890	.2854	.2827	.2843	.2806
		32	UNEF	.2922	.2964	.2953	.2922	.2898	.2912	.2880
3/ 8	.3750	16	UNC	.3344	.3401	.3387	.3344	.3311	.3331	.3287
		24	UNF	.3479	.3528	.3516	.3479	.3450	.3468	.3430
		32	UNEF	.3547	.3591	.3580	.3547	.3522	.3537	.3503
7/16	.4375	14	UNC	.3911	.3972	.3957	.3911	.3876	.3897	.3850
		20	UNF	.4050	.4104	.4091	.4050	.4019	.4037	.3995
		24	UNS	.4104	.4153	.4142	.4104	.4075	.4092	.4055
		28	UNEF	.4143	.4189	.4178	.4143	.4116	.4132	.4096
1/ 2	.5000	12	UNS	.4459	.4529	.4511	.4459	.4419	.4443	.4389
		13	UNC	.4500	.4565	.4548	.4500	.4463	.4485	.4435
		20	UNF	.4675	.4731	.4717	.4675	.4643	.4662	.4619
		24	UNS	.4729	.4780	.4767	.4729	.4700	.4717	.4678
		28	UNEF	.4768	.4816	.4804	.4768	.4740	.4757	.4720
		32	UN	.4797	.4842	.4831	.4797	.4771	.4787	.4752
9/16	.5625	12	UNC	.5084	.5152	.5135	.5084	.5045	.5068	.5016
		18	UNF	.5264	.5323	5308	.5264	.5230	.5250	.5205
		24	UNEF	.5354	.5405	.5392	.5354	.5325	.5342	.5303
		32	UN	.5422	.5467	.5456	.5422	.5396	.5412	.5377
5/ 8	.6250	11	UNC	.5660	.5732	.5714	.5660	.5619	.5644	.5589
		18	UNF	.5889	.5949	.5934	.5889	.5854	.5875	.5828
		24	UNEF	.5979	.6031	.6018	.5979	.5949	.5967	.5927
		32	UN	.6047	.6093	.6082	.6047	.6020	.6036	.6000
11/16	.6875	16	UN	.6469	.6531	.6515	.6469	.6433	.6455	.6407
		20	UN	.6550	.6606	.6592	.6550	.6518	.6537	.6494
		24	UNEF	.6604	.6656	.6643	.6604	.6574	.6592	.6552
3/ 4	.7500	10	UNC	.6850	.6927	.6907	.6850	.6806	.6832	.6773
		16	UNF	.7094	.7159	.7143	.7094	.7056	.7079	.7029
		18	UNS	.7139	.7199	.7184	.7139	.7104	.7125	.7079
		20	UNEF	.7175	.7232	.7218	.7175	.7142	.7162	.7118
		32	UN	.7297	.7344	.7333	.7297	.7270	.7286	.7250
13/16	.8125	16	UN	.7719	.7782	.7766	.7719	.7683	.7704	.7655
		18	UNS	.7764	.7824	.7809	.7764	.7729	.7750	.7704
		20	UNEF	.7800	.7857	.7843	.7800	.7767	.7787	.7743

Standard Inch Pitch Diameters:
Basic, 2B, 3B, 2A & 3A

HEMCO

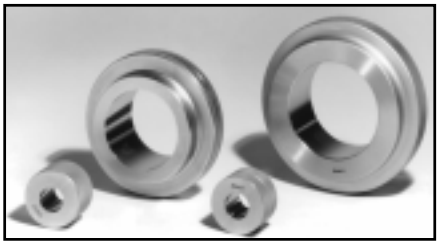
Standard Inch Pitch Diameters										
No. or Fraction	Decimal Size	T.P.I.		Work Plugs Class			Rings & Setting Plugs Class			
				Go Basic	2B HI	3B HI	2, 3 & 3A Go	3A Lo	1A & 2A Go	2A Lo
7/ 8	.8750	9	UNC	.8028	.8110	.8089	.8028	.7981	.8009	.7946
		14	UNF	.8286	.8356	.8339	.8286	.8245	.8270	.8216
		16	UN	.8344	.8407	.8391	.8344	.8308	.8329	.8280
		18	UNS	.8389	.8449	.8435	.8389	.8354	.8375	.8329
		20	UNEF	.8425	.8482	.8468	.8425	.8392	.8412	.8368
15/16	.9375	16	UN	.8969	.9034	.9018	.8969	.8932	.8954	.8904
		20	UNEF	.9050	.9109	.9094	.9050	.9016	.9036	.8991
1"	1.0000	8	UNC	.9188	.9276	.9254	.9188	.9137	.9168	.9100
		12	UNF	.9459	.9535	.9516	.9459	.9415	.9441	.9382
		14	UNS	.9536	.9609	.9590	.9536	.9494	.9519	.9463
		16	UNS	.9594	.9659	.9643	.9594	.9557	.9579	.9529
		18	UNS	.9639	.9701	.9685	.9639	.9603	.9625	.9578
		20	UNEF	.9675	.9734	.9719	.9675	.9641	.9661	.9616
1-1/16	1.0625	12	UN	1.0084	1.0158	1.0139	1.0084	1.0042	1.0067	1.0010
		18	UNEF	1.0264	1.0326	1.0310	1.0264	1.0228	1.0250	1.0203
1-1/8	1.1250	7	UNC	1.0322	1.0416	1.0393	1.0322	1.0268	1.0300	1.0228
		8	UN	1.0438	1.0528	1.0505	1.0438	1.0386	1.0417	1.0348
		12	UNF	1.0709	1.0787	1.0768	1.0709	1.0664	1.0691	1.0631
		16	UN	1.0844	1.0909	1.0893	1.0844	1.0807	1.0829	1.0779
		18	UNEF	1.0889	1.0951	1.0935	1.0889	1.0853	1.0875	1.0828
1-3/16	1.1875	12	UN	1.1334	1.1409	1.1390	1.1334	1.1291	1.1317	1.1259
		18	UNEF	1.1514	1.1577	1.1561	1.1514	1.1478	1.1499	1.1450
1-1/4	1.2500	7	UNC	1.1572	1.1668	1.1644	1.1572	1.1517	1.1550	1.1476
		8	UN	1.1688	1.1780	1.1757	1.1688	1.1635	1.1667	1.1597
		12	UNF	1.1959	1.2039	1.2019	1.1959	1.1913	1.1941	1.1879
		16	UN	1.2094	1.2160	1.2144	1.2094	1.2056	1.2079	1.2028
		18	UNEF	1.2139	1.2202	1.2186	1.2139	1.2103	1.2124	1.2075
1-5/16	1.3125	12	UN	1.2584	1.2659	1.2640	1.2584	1.2541	1.2567	1.2509
		18	UNEF	1.2764	1.2827	1.2811	1.2764	1.2728	1.2749	1.2700
1-3/8	1.3750	6	UNC	1.2667	1.2771	1.2745	1.2667	1.2607	1.2643	1.2563
		8	UN	1.2938	1.3031	1.3008	1.2938	1.2884	1.2916	1.2844
		12	UNF	1.3209	1.3291	1.3270	1.3209	1.3162	1.3190	1.3127
		16	UN	1.3344	1.3410	1.3394	1.3344	1.3306	1.3329	1.3278
		18	UNEF	1.3389	1.3452	1.3436	1.3389	1.3353	1.3374	1.3325
1-7/16	1.4375	12	UN	1.3834	1.3910	1.3891	1.3834	1.3790	1.3816	1.3757
		18	UNEF	1.4014	1.4079	1.4062	1.4014	1.3977	1.3999	1.3949
1-1/2	1.5000	6	UNC	1.3917	1.4022	1.3996	1.3917	1.3856	1.3893	1.3812
		8	UN	1.4188	1.4283	1.4259	1.4188	1.4133	1.4166	1.4093
		12	UNF	1.4459	1.4542	1.4522	1.4459	1.4411	1.4440	1.4376
		16	UN	1.4594	1.4662	1.4645	1.4594	1.4555	1.4578	1.4526
		18	UNEF	1.4639	1.4704	1.4687	1.4639	1.4602	1.4624	1.4574
1-9/16	1.5625	18	UNEF	1.5264	1.5329	1.5312	1.5264	1.5227	1.5249	1.5199
1-5/8	1.6250	8	UN	1.5438	1.5535	1.5510	1.5438	1.5382	1.5416	1.5342
		12	UN	1.5709	1.5785	1.5766	1.5709	1.5665	1.5691	1.5632
		18	UN	1.5844	1.5912	1.5895	1.5844	1.5805	1.5828	1.5776
1-11/16	1.6875	12	UN	1.6334	1.6412	1.6392	1.6334	1.6289	1.6316	1.6256
		16	UN	1.6469	1.6538	1.6521	1.6469	1.6429	1.6453	1.64
		18	UNEF	1.6514	1.6580	1.6563	1.6514	1.6476	1.6499	1.6448
1-3/4	1.7500	8	UN	1.6688	1.6786	1.6762	1.6688	1.6631	1.6656	1.6590
		12	UN	1.6959	1.7037	1.7017	1.6959	1.6914	1.6941	1.6881
		16	UN	1.7094	1.7163	1.7146	107094	1.7054	1.7078	1.7025
1-7/8	1.8750	8	UN	1.7938	1.8038	1.8013	1.7938	1.7881	1.7915	1.7838
		12	UN	1.8209	1.8287	1.8267	1.8209	1.8164	1.8191	1.8131
		16	UN	1.8344	1.8413	1.8396	1.8344	1.8304	1.8328	1.8275
2"	2.0000	8	UN	1.9188	1.9289	1.9264	1.9188	1.9130	1.9165	1.9087
		12	UN	1.9459	1.9538	1.9518	1.9459	1.9414	1.9441	1.9380
		16	UN	1.9594	1.9664	1.9646	1.9594	1.9554	1.9578	1.9524

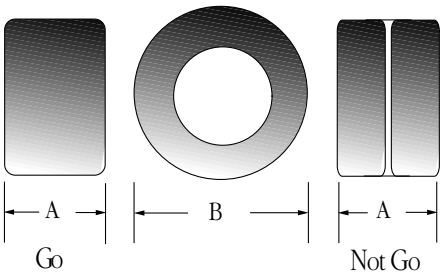
Metric Pitch Diameters								
Basic	6H Work Thread Plugs				6g Rings & Setting Plugs			
	mm	Inch	mm	Inch	mm	Inch	mm	Inch
	Min. GO	Min. GO	Max HI	Max HI	Min. GO	Min. GO	Max LO	Max LO
M1.6 X .35	1.3730	.05406	1.4580	.05740	1.3540	.05331	1.2910	.05083
M2 X .40	1.7400	.06850	1.8300	.07205	1.7210	.06776	1.6540	.06512
M2.5 X .45	2.2080	.08693	2.3030	.09067	2.1880	.08614	2.1170	.08335
M3 X .5	2.6750	.10531	2.7750	.10925	2.6550	.10453	2.5800	.10157
M3.5 X .6	3.1100	.12244	3.2220	.12685	3.0890	.12161	3.0040	.11827
M4 X .7	3.5450	.13957	3.6630	.14421	3.5230	.13870	3.4330	.13516
M5 X .8	4.4800	.17638	4.6050	.18130	4.4560	.17543	4.3610	.17169
M6 X 1	5.3500	.21063	5.5000	.21654	5.3240	.20961	5.2120	.20520
M7 X 1	6.3500	.25000	6.5000	.25591	6.3240	.24898	6.2120	.24457
M8 X 1.25	7.1880	.28299	7.3480	.28929	7.1600	.28189	7.0420	.27724
M8 X1	7.3500	.28937	7.5000	.29528	7.3240	.28835	7.2120	.28394
M10 X 1.5	9.0260	.35535	9.2060	.36244	8.9940	.35409	8.8620	.34890
M10 X 1.25	9.1880	.36173	9.3480	.36803	9.1600	.36063	9.0420	.35598
M10 X 1.0	9.3500	.36811	9.5000	.37402	9.3240	.36701	9.2120	.36268
M10 X .75	9.5130	.37453	9.6450	.37972	9.4910	.37366	9.3910	.36972
M12 X 1.75	10.8630	.42768	11.0630	.43555	10.8290	.42634	10.6790	.42043
M12 X 1.5	11.0260	.43409	11.2160	.44157	10.9940	.43283	10.8540	.42732
M12 X 1.25	11.1880	.44047	11.3680	.44756	11.1600	.43937	11.0280	.43417
M12 X 1	11.3500	.44685	11.5100	.45315	11.3240	.44583	11.2060	.44118
M14 X 2	12.7010	.50004	12.9130	.50839	12.6630	.49854	12.5030	.49224
M14 X 1.5	13.0260	.51283	13.2160	.52031	12.9940	.51157	12.8540	.50606
M14 X 1.0	13.3500	.52559	13.5100	.53189	13.3240	.52457	13.2060	.51992
M15 X 1	14.3500	.56496	14.5100	.57126	14.3240	.56394	14.2060	.55929
M16 X 2	14.7010	.57878	14.9130	.58713	14.6630	.57728	14.5030	.57098
M16 X 1.5	15.0260	.59157	15.2160	.59906	14.9940	.59031	14.8540	.58480
M16 X 1	15.3500	.60433	15.5100	.61063	15.3240	.60331	15.2060	.59866
M17 X 1	16.3500	.64370	16.5100	.65000	16.3240	.64268	16.2060	.63803
M18 X 1	17.3500	.68307	17.5100	.68937	17.3240	.68205	17.2060	.67740
M18 X 1.5	17.0260	.67031	17.2160	.67780	16.9940	.66906	16.8540	.66354
M20 X 2.5	18.3760	.72346	18.6000	.73228	18.3340	.72181	18.1640	.71512
M20 X 1.5	19.0260	.74906	19.2160	.75654	18.9940	.74780	18.8540	.74228
M20 X 1	19.3500	.76181	19.5100	.76811	19.3240	.76079	19.2060	.75614
M22 X 2.5	20.3760	.80220	20.6000	.81102	20.3340	.80055	20.1640	.79386
M22 X 1.5	21.0260	.82780	21.2160	.83528	20.9940	.82654	20.8540	.82102
M24 X 3	22.0510	.86815	22.3160	.87858	22.0030	.86626	21.8030	.85839
M24 X 2	22.7010	.89374	22.9250	.90256	22.6630	.89224	22.4930	.88555
M25 X 1.5	24.0260	.94591	24.2260	.95378	23.9940	.94465	23.8440	.93874
M27 X 3	25.0510	.98626	25.3160	.99669	25.0030	.98437	24.8030	.97650
M27 X 2	25.7010	1.01185	25.9250	1.02067	25.6630	1.01035	25.4930	1.00366
M30 X 3.5	27.7270	1.09161	28.0070	1.10264	27.6740	1.08953	27.4620	1.08118
M30 X 2	28.7010	1.12996	28.9250	1.13878	28.6630	1.12846	28.4930	1.12177
M30 X 1.5	29.0260	1.42760	29.2260	1.15063	28.9940	1.14150	28.8440	1.13559
M33 X 2	31.7010	1.24807	31.9250	1.25689	31.6630	1.24657	31.4930	1.23988
M35 X 1.5	34.0260	1.33961	34.2260	1.34748	33.9940	1.33835	33.8440	1.33244
M36 X 4	33.4020	1.31504	33.7020	1.32685	33.3420	1.31268	33.1180	1.30386
M36 X 2	34.7010	1.36618	34.9250	1.37500	34.6630	1.36469	34.4930	1.35799
M39 X 2	37.7010	1.48429	37.9250	1.49311	37.6630	1.48280	37.4930	1.47610

Cylindrical Ring Gages/Master Setting Rings HEMCO

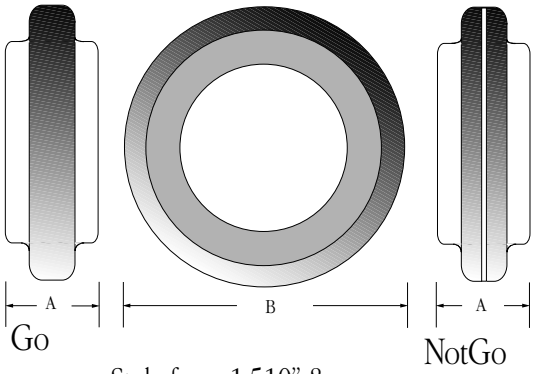
- ❏ HemcoChrome Process
- ❏ All gages are made to ANSI Std B47.1 and in accordance with ANSI B89 .1.6M.
- ❏ Master-Bilateral: +/- 1/2 tolerance.
  Go: - tolerance
  NotGo: + tolerance
- ❏ Unconditionally guaranteed against chipping
- ❏ NotGo rings are identified by a groove around the outside diameter.

Decimal Range		Metric Range		General Dimensions		
Above	To and Including	Above	To and Including	Ring Size Number	Ring Outside Diameter "B" Dim.	Ring Thickness "A" Dim.
.059	.150	1.50	3.810	0	15/16	3/16
.150	.230	3.81	5.842	0	15/16	3/8
.230	.365	5.842	9.270	1	1-1/8	9/16
.365	.510	9.27	12.95	2	1-3/8	3/4
.510	.825	12.95	20.96	3	1-3/4	15/16
.825	1.135	20.96	28.83	4	2-1/8	1-1/8
1.135	1.510	28.83	38.35	5	2-1/2	1-5/16
1.510	2.010	38.35	51.05	6	4	1-1/2
2.010	2.510	51.05	63.75	7	4-1/2	1-1/2
2.510	3.010	63.75	76.45	8	5	1-1/2
3.010	3.510	76.45	89.15	9	5-1/2	1-1/2
3.510	4.010	89.15	101.85	10	6-1/4	1-1/2
4.010	4.760	101.85	120.90	11	7-1/4	1-1/2
4.760	5.510	120.90	139.95	12	8-1/4	1-1/2
5.510	6.260	139.95	159.00	13	9-1/4	1-1/2
6.260	7.010	159.00	178.05	14	10-1/4	1-1/2
7.010	7.760	178.05	197.10	15	11-1/4	1-1/2
7.760	8.510	197.10	216.15	16	12-1/4	1-1/2
8.510	9.260	216.15	235.20	17	13-1/4	1-1/2
9.260	10.010	235.20	254.25	18	14-1/4	1-1/2
10.010	10.760	254.25	273.30	19	15-1/4	1-1/2
10.760	11.510	237.30	292.35	20	16-1/4	1-1/2
11.510	12.260	292.35	311.40	21	17-1/4	1-1/2





Style up to 1.510"



Style from 1.510" & up.

Edge Breaks on Cylindrical Rings:
0" - 2" .010 Min.
2" - 4" .015 Min.
4" - 6" .020 Min.
6" & Up .030 Min.

When Ordering Cylindrical Rings Please Specify:

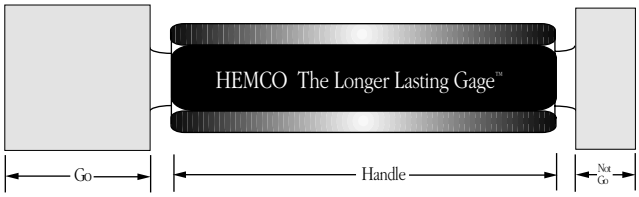
Plain Cylindrical Rings	Qty	Exact Diameter	Select One: Condition	Select One: Tolerance	Select One: Certifications	Special Options
			Go/Max/Minus Tol NotGo/Min/Plus Tol Master/Bilateral Tol	"XX" "X" "Y" "Z" "ZZ"	Long Form Short Form Special	Steel only. Tapped holes for handles. Slots. Air Grooves. Special Length. Marking Instructions. Radius.
Example	1	2.875"	Go	XX	Long Form	Radius
				Note 4	Note 5	Note 6

Notes:
1. Quantity Required.
2. Go, NotGo or Master Ring.
3. Exact Diameter of Member
4. Gage makers tolerance: XX, X, Y, Z, ZZ.
5. Short or Long Form Certification if required.
6. When Gage is special, please include all necessary information such as: Tapped holes for handles, Special Thickness, Slots, Air Grooves, Marking Instructions.

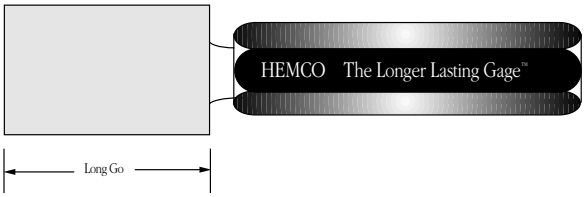
Taperlock Cylindrical Plug Gages

HEMCO

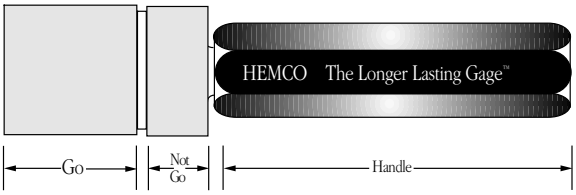
- ❑ HemcoChrome Process
- ❑ All gages are made to ANSI B47.1 and B89.1.5
- ❑ Gages normally furnished to the Unilateral tolerance system:
  Go + Plus tolerance.
  NotGo - Minus tolerance.
- ❑ Gage members under .150 have male centers.
- ❑ Gage members over .150 have female centers.



Double End Go & NotGo



Long Go



Progressive

Decimal Range		Metric Range		General Dimensions					
Above	To and Including	Above	To and Including	Go Member Length	NotGo Member Length	Long Go Member Length	Handle No.	Handle Length	Width Across Flat of Handle
.059	.105	1.50	2.67	3/8	3/16	11/16	000	1-1/2	3/16
.105	.150	2.67	3.81	3/8	7/32	23/32	00	1-3/4	1/4
.150	.230	3.81	6.10	13/32	9/32	13/16	0	2	5/16
.230	.365	6.10	9.27	3/4	5/16	1-3/16	1	2-3/4	3/8
.365	.510	9.27	12.95	1	3/8	1-1/2	2	3	1/2
.510	.825	12.95	20.96	1-1/4	1/2	1-7/8	3	3-1/4	11/16
.825	1.135	20.96	28.83	1-1/2	5/8	2-1/8	4	3-5/8	7/8
1.135	1.510	28.83	38.35	1-5/8	3/4	2-3/8	5	4	1

When Ordering Taperlock Cylindrical Plugs Please Specify:

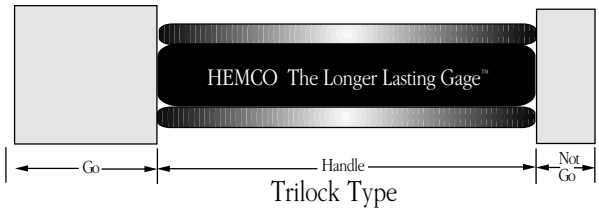
Plain Cylindrical Taperlock Plugs	Qty	Exact Diameter (s)	Select One				Special Options
			Handle	Condition	Tolerance	Certifications	
			Single End. Double End. Member only.	Go NotGo Progressive Long Go Bilateral	"XX" "X" "Y" "Z" "ZZ"	Long Form Short Form Special	Special Length. Marking Inst. Special Colored Handles. Steel only. Notches.
Example	1	2.875"	S.E.	Go	XX	Long Form	Radius
			Note 1		Note 3	Note 4	Note 2

Notes:
1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. Drawings must accompany orders for specials where applicable.
3. Made to "X" tolerance unless specified.
4. See page 3 for explanation of Short & Long form Certifications.

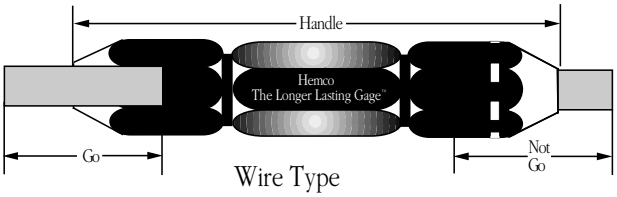
Reversible Cylindrical Plug Gages

HEMCO

- HemcoChrome Process
- All Gages are made to ANSI B47.1 and B89.1.5
- Gages are normally furnished to the Unilateral tolerance system:
  Go: + tolerance
  NotGo: - tolerance
- Wire type members are held securely by bushings compressed when the aluminum nuts are tightened.
- Trilock members are secured by cap screws into handle.
- The feature of Reversible gages is that when one end becomes worn or damaged, the gage member can be reversed providing a new gage.
- Exceptional value, essentially two gage members for the price of one.



Trilock Type



Wire Type

Decimal Range		Metric Range		General Dimensions					
Above	To and Including	Above	To and Including	Style	Go Member Length	NotGo Member Length	Handle No.	Handle Length	Width across flat of handle.
.010	.075	0.25	1.91	Wire Type	2	2	1W	2-1/4	1/4
.075	.180	1.91	4.57	Wire Type	2	2	2W	2-11/16	3/8
.180	.281	4.57	7.14	Wire Type	2	2	3W	3-5/16	9/16
.281	.406	7.14	10.31	Wire Type	2	2	4W	3-9/16	11/16
.406	.510	10.31	12.95	Wire Type	2	2	5W	4-1/4	13/16
.510	.635	12.95	16.13	Wire Type	2	2	6W	4-1/2	15/16
.635	.760	16.13	19.30	Wire Type	2	2	7W	4-5/8	11/16
.760	.947	19.30	24.05	Trilock	1-1/4	3/4	2-1/2	4	1/2
.947	1.135	24.05	28.83	Trilock	1-3/8	3/4	3-1/2	4	5/8
1.135	1.510	28.83	38.35	Trilock	1-1/2	3/4	4-1/2	4	13/16
1.510	2.010	38.35	51.05	Trilock	1-7/8	7/8	5-1/2	4-1/2	1
2.010	2.510	51.05	63.75	Trilock	2	7/8	6	5	1-1/8
2.510	3.510	63.75	89.15	Trilock	2	1	7	6	1-1/4
3.510	8.010	89.15	203.45	Trilock	2-1/8	1	7	6	1-1/4
8.010	12.010	203.45	305.05	Annular	2-1/4	1	Ball Hdls.		

When Ordering Cylindrical Reversible Plugs Please Specify:

Plain Cylindrical Reversible Plugs	Qty	Exact Diameter (s)	Select One				Special Options
			Handle	Condition	Tolerance	Certifications	
			Single End. Double End. Member only.	Go NotGo Progressive Long Go Bilateral	"XX" "X" "Y" "Z" "ZZ"	Long Form Short Form Special	Special Length. Marking Inst. Special Colored Handles. Steel only. Notches.
Example	1	0.5	M/O	Go	XX	Long Form	
			Note 1		Note 3	Note 4	Note 2

Notes: 1. Unless specified, standard gage handles are black anodized. Metric gage handles are yellow anodized.
2. Drawings must accompany orders for specials where applicable.
3. Made to "X" tolerance unless specified.
4. See page 3 for explanation of Short & Long Form Certifications

Master Setting Discs

HEMCO

HemcoChrome Process

- All gages conform to ANSI B47.1
- Styles 1 and 3 are normally furnished with a bilateral tolerance: ± 1/2 tolerance.
- Style 2 normally furnished to the unilateral tolerance system: Go: - tolerance NotGo: + tolerance
- Style 2, 1.510 dia. to and including 8.010 dia. are two Style 3 master discs separated by an AGD separator plate and held together with a tie rod and insulators.

Style 3 trilock

Inch Range Diameters		Metric Range Diameters		General Dimensions		
Above	To & Including	Above	To & Including	Style 1 Length	Style 2 Length: 2 Diameters - Length of each dia.	Style 3 Length
.105	.150	2.67	3.81	3/4	5/16	3/8
.150	.230	3.81	5.80	7/8	3/8	7/16
.230	.365	5.80	9.27	1	7/16	1/2
.365	.510	9.27	12.95	1-1/8	1/2	9/16
.510	.825	12.95	20.95	1-1/4	9/16	5/8
.825	1.135	20.95	28.83	1-3/8	5/8	11/16
1.135	1.510	28.83	38.35	1-5/8	3/4	13/16
1.510	2.010	38.35	51.05	1-7/8	7/8	7/8
2.010	2.510	51.05	63.75	2	1	7/8
2.510	3.510	63.75	89.15	2	1	1
3.510	8.010	89.15	203.45	2-1/8	1	1

When Ordering Please Specify:

1. Quantity Required.
2. Exact Diameter of Member.
3. Gage makers tolerance: XX, X, Y or Z.
4. Style: 1, 2, or 3
5. Short or Long Form Certification if required.
6. When Gage is special, please include all necessary information such as: Marking Instructions, Certifications, etc.

Snap Gages

- Model A has 4 round gaging buttons.
- Model MCS has 2 square gaging buttons and a single rectangle anvil.
- Model CS has 2 square anvils and single rectangle anvil.

Style "CS" & "MCS" Snap Gages

Style "A" Snap Gage

Frame no.	Model MCS	
	From	To
00	.000	.195
00X	.195	.385
0	.385	.570
0X	.570	.760

Frame no.	Model CS Range	
	From	To
1	0	1/4
2	1/4	1/2
2X	1/2	3/4
3	3/4	1
3X	1	1-1/4
4	1-1/4	1-1/2
4X	1-1/2	1-3/4
5	1-3/4	2
5X	2	2-1/4
6	2-1/4	2-1/2
6X	2-1/2	2-3/4
7	2-3/4	3-1/16
7X	3-1/16	3-7/16
8	3-7/16	3-13/16
8X	3-13/16	4-3/16
9	4-3/16	4-9/16

Frame no.	Model CS Range	
	From	To
9X	4-9/16	4-15/16
10	4-15/16	5-5/16
10X	5-5/16	5-11/16
11	5-11/16	6-1/8
11X	6-1/8	6-5/8
12	6-5/8	7-1/8
12X	7-1/8	7-5/8
13	7-5/8	8-1/8
13X	8-1/8	8-5/8
14	8-5/8	9-1/8
14X	9-1/8	9-5/8
15	9-5/8	10-1/8
15X	10-1/8	10-5/8
16	10-5/8	11-1/8
16X	11-1/8	11-5/8

Frame no.	Model A Range	
	From	To
1	0	1/2
2	1/2	1
6	1	1-1/2
4	1-1/2	2
5	2	2-1/2
6	2-1/2	3
7	3	3-3/4
8	3-3/4	4-1/2
9	4-1/2	5-1/4
10	5-1/4	6
11	6	7
12	7	8
13	8	9
14	9	10
15	10	11
16	11	12

Designations	Thread Series	ANSI Reference
ACME-C	Acme Threads, centralizing	B1.5
ACME-G	Acme threads, general purpose (see also Stub Acme)	B1.5
AMO	American Standard microscope objective threads	B1.11
ANPT	Aeronautical National Form taper pipe threads (2)	. . .
BUTT	Buttress threads, pull type	B1.9
PUSH-BUTT	Buttress threads, push type	B1.9
F-PTF	Dryseal fine taper pipe thread series	B1.20.3 (Appendix C)
M	Metric screw threads - M profile with basic ISO 68 Profile	B1.13M, B1.18M
MJ	Metric screw threads - MJ profile with rounded root of radius 0.15011P to 0.18042P	B1.21M
MJS	Metric screw threads - MJ profile special series	B1.21M
	Class 5 interference fit external threads	B1.12
NC5HF	For driving in hard ferrous material of hardness over 160 Bhn	
NC5 CSF	For driving in copper alloy and soft ferrous material of 160 Bhn or less	
NC5 ONF	For driving in other nonferrous material (Nonferrous materials other than copper alloys), any hardness	
	Class 5 interference fit internal threads	B1.12
NC5 IF	Entire ferrous material range	
NC5 INF	Entire nonferrous material range	
NGO	National gas outlet threads (1)	ANSI/CGA V-1
NGS	National gas straight threads	ANSI/CGA V-1
NGT	National gas taper threads (see also SGT)	ANSI/CGA-V1
NH	American Standard hose coupling threads of full form	(B1.20.7)
NHR	American Standard hose coupling threads for garden hose applications	(B1.20.7)
NPSC	American Standard Straight pipe threads in pipe couplings	B1.20.1
NPSF	Dryseal American Standard fuel internal straight pipe threads	B1.20.3
NPSH	American Standard straight hose coupling threads for joining to American Standard taper pipe threads	(B1.20.7)
NPSI	Dryseal American Standard intermediate internal straight pipe threads	B1.20.3
NPSL	American Standard straight pipe threads for loose-fitting mechanical joints with locknuts	B1.20.1
NPSM	American Standard straight pipe threads for free-fitting mechanical joints for fixtures	B1.20.1
NPT	American Standard taper pipe threads for general use	B1.20.1
NPTF	Dryseal American Standard taper pipe threads	B1.20.3
PTF-SAE Short	Dryseal SAE short taper pipe threads	B1.20.3
PTF-SPL Short	Dryseal special short taper pipe threads	B1.20.3 (Appendix C)
S	ISO miniature screw threads .25 to 1.4mm, inclusive	. . .
SGT	Special gas taper threads	ANSI/CGA V-1
SPL-PTF	Dryseal special taper pipe threads	B1.20.3 (Appendix C)
Stub Acme	Stub Acme threads	B1.8
UN	Unified inch screw thread, constant-pitch series	B1.1
UNF	Unified inch screw thread, fine-pitch series	B1.1
UNEF	Unified inch screw thread, extra-fine pitch series	B1.1
UNJ	Unified inch screw thread, constant-pitch series, with rounded root of radius 0.15011P to 0.18042P (3)	B1.15
UNJC	Unified inch screw thread, coarse-pitch series, with rounded root of radius 0.15011P to 0.18042P (3)	B1.15
UNJF	Unified inch screw thread, fine-pitch series, with rounded root of radius 0.15011P to 0.18042P (3)	B1.15
UNJEF	Unified inch screw thread, extra-fine pitch series, with rounded root of radius 0.15011P to 0.18042P (3)	B1.15
UNR	Unified inch screw thread, constant-pitch series, with rounded root of radius not less than 0.108P	B1.1
UNRC	Unified inch screw thread, coarse-thread series, with rounded root of radius not less than 0.108P	B1.1
UNRF	Unified inch screw thread, fine-pitch series, with rounded root of radius not less than 0.108P	B1.1
UNREF	Unified inch screw thread, extra-fine pitch series, with rounded root of radius not less than 0.108P	B1.1
UNM	Unified miniature thread series	B1.10
UNS	Unified inch screw thread, special diameter pitch or length of engagement	B1.1

Notes: (1) All threads, except NGO, are right hand, unless otherwise designated. For NGO threads, designations RH or LH are required.

(2) As published in SAE AS71051

(3) As published in Military Specification SAE AS8879, and ISO 3161.