

# HEMCO

The Longer Lasting Gage™

# Gage



Clicking on a picture will take you to that catalog page. Clicking on HEMCO in upper right corner will take you to the index on page 2.



**HEMCO Gage**

455 Douglas Avenue  
Holland, MI 49424

Phone: (616) 396-4604

FAX: (616) 396-0413

Internet: <http://www.hemcogages.com>

- ❖ Prices Subject to change without notice.
- ❖ Written Quotations expire in 30 days.
- ❖ \$35.00 Minimum Order.
- ❖ Terms: Net 30 days subject to approved credit.
- ❖ 15% Restocking Charge on Standard Gages.
- ❖ FO.B.: Holland, Michigan
- ❖ No credit on returned Certifications or Specially marked handles.
- ❖ Terms and Conditions on Page 6

## Welcome to the HEMCO World of Value!

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. 🍷

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Minimum Order \$35.00

Terms: Net 30 Days subject to credit approval.

We also take Visa and MasterCard.

American Express is subject to 1% service charge.

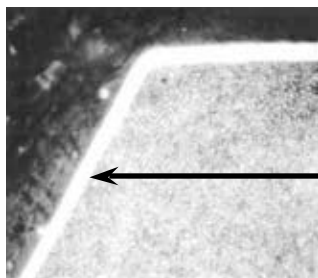
Standard Catalog items subject to Restocking Charge.

No credit given on Certifications and specially marked handles.

Sales Terms and Conditions are on Page 6.

# HemcoChrome Gages Save You Money! **HEMCO** Because They Last Longer!!

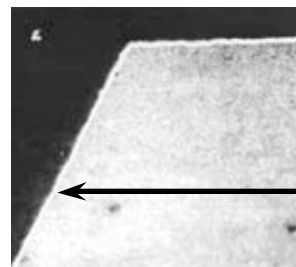
HemcoChrome Gage  
Magnified 400 X



## A Picture is Worth a Thousand Words

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

Imitator Brand A  
Magnified 400X

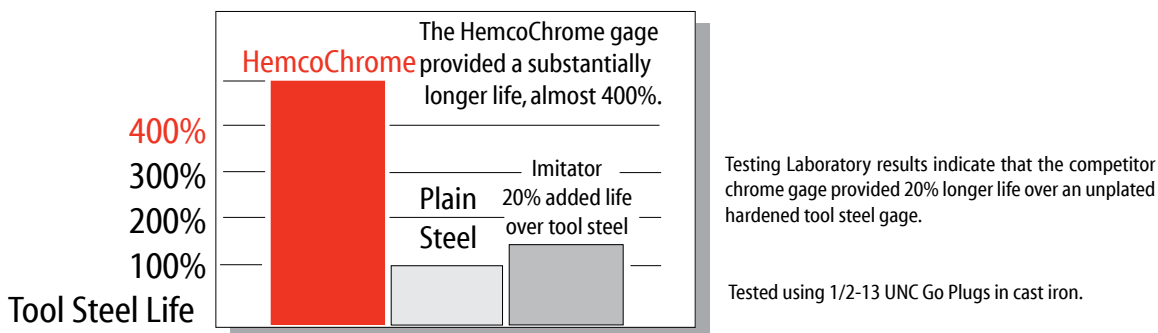


Hemco creates this unique difference by using talented teams of experienced, caring people combined with:

- ❑ 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 unique 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!



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 standard gages are supplied with a Certification of Compliance at No Charge.



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	\$12.00	\$17.00
Tapered Thread Plugs & Rings	\$20.00	\$25.00
Cylindrical Plugs & Rings	\$12.00	\$17.00
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. Conformance to ISO 9001 alone does not demonstrate a lab's ability to produce technically valid data results, and all ISO 9001 elements relevant to calibration services within a laboratory's quality system are incorporated into 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

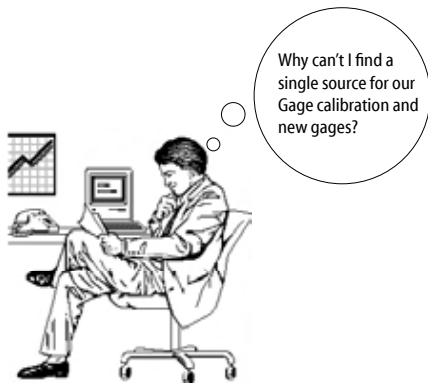


Size	ISO/IEC 17025						ANSI/NCSL Z540-1 Certifications	
	Thread Work Plug P.D. O.D.	Thread Ring P.D. I.D.	Thread Set Plug P.D. O.D.	HILO Set Plug	Cylindrical Plugs	Cylindrical Rings	3/4 TPF Tapered Plugs	3/4 TPF Tapered Rings
0" - 4" 1 mm - 101.6 mm	\$17.00	\$24.50	\$19.50	\$24.50	\$14.50	\$19.50	\$32.00	\$42.00
4.0001" - 8" 101.601 mm - 203.2	\$22.00	\$27.00	\$22.00	\$27.00	\$14.50	\$24.50	O.D. P.D. Lead Flank	P.D. I.D.
8.0001" & up 203.201 mm & up	\$27.00	\$32.00	\$32.00	\$27.00	\$17.00	\$32.00	Angles Taper	Taper

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, multi-lead, special thread forms, will be priced on application.

Failed Gage Report charge: \$10.00 Cert made for third party: \$5.00



Inspect & Certify Turn Around	
Product Type	Working Days
Straight Plugs	7
Straight Thread Rings	10
Tapered Therad Plugs	10
Tapered Thread Rings	10
Cylindrical Plugs	5
Cylindrical Rings	10
Tapered Cylindrical Rings	10
Tapered Cylindrical Plugs	10

\*\*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 an ISO 17025 and ANSI/NCCL Z540-1 Accredited Certification.

\*Ring Gages are calibrated by master plugs. Although we have over 16,000 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, of the major reason(s) for it's lack of conformance. At that time, you will be offered our Gage Saver™ program and the quoted additional time necessary to rework or replace the non-conforming gage(s). Any gage that is reworked or replaced that was sent in under our Inspect & Certify Service is returned with an ISO 17025 Accredited 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 Cylindrical or Adjustable Thread Ring gage or 90% of the price of a new Plug Gage, Solid Tapered or Straight Thread Ring 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 16,000 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 4.)

Gages replaced by HEMCO under the Gage Saver™ program become the property of HEMCO and are not returnable.

# Your Worn Gages Are Worth Money!



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.

0" - 4" Rings: . . . . . 6 Working days.

0" - 4" Thread Setting Plugs: 6 Working days.

(Cylindrical Master Discs 0" to 1-1/2" require 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.

#### HEMCO TERMS AND CONDITIONS OF SALE

The terms and conditions of sales as set forth below will be the only terms and conditions that will apply to and govern any purchase order accepted by Seller despite any terms or conditions to the contrary incorporated on Buyer's purchase order forms or order blanks and/or otherwise specified by Buyer. Any term or condition in any Buyer's purchase order or other form in conflict with these terms or conditions is hereby expressly rejected and shall not be binding on Seller.

##### Prices and Taxes

Prices for goods and services provided by the Seller are set by the Seller and are subject to change without notice prior to acceptance of Buyer's order by Seller. The price does not include any federal, state or local property, license, privilege, sales, use, excise, gross receipts, value added or other like taxes which may be applicable to or imposed upon to, or imposed upon, the transaction, the goods, or the sale, transportation, delivery, value or use thereof, or any services performed in connection therewith. Such taxes are for the account of the Buyer and the Buyer agrees to pay or reimburse such taxes which Seller, its contractors or suppliers are required to pay. Such applicable taxes and other charges known to Seller, will be included in Seller's invoice as a separate item, which Buyer agrees to pay, or, in the case of taxes, to supply Seller with appropriate tax exemption certificates in a form satisfactory to Seller.

##### Terms of Payment

1. Unless otherwise specified by Seller in writing, payment terms are net 30 days from invoice date, subject to change because of financial or credit conditions existing at time of shipment. Until invoice is paid in full, purchaser grants Seller a security interest in the product sold hereunder in accordance with the Uniform Commercial Code.
2. Buyer agrees to pay a service charge of 1.5% monthly on all invoices unpaid after 30 days. In the event payment is not made by the Buyer as herein provided and in the event legal proceedings are necessary to obtain payment, Buyer agrees to pay legal fees, court costs, expenses of litigation and collection.
3. Seller reserves the right to modify these terms for export business and/or special projects.
4. If, in Seller's judgment, the financial condition of the Buyer at the time the product is ready for shipment does not justify the terms specified, the Seller reserves the right to change these terms or to require payment in cash, security, or other adequate assurance satisfactory to the Seller.

##### Approximate Shipping Dates

1. The shipping date shown on the acknowledgement is approximate and dependent upon prior sales and circumstances beyond the Seller's control.
2. Seller will not be liable for any damages resulting directly or indirectly from fire, embargo, strikes, or act of God, civil strife or insurrection, transportation delay, whether at place of manufacture or elsewhere, fuel, power, or other energy, raw material or supply shortages, or from delay caused by any rule, regulation or order of any governmental authority directly affecting delivery or from other

causes beyond Seller's control.

##### Delivery and Risk of Loss

All goods shall be shipped to Buyer FOB point of shipping. Risk of loss and/or damage and title to the goods will pass to Buyer upon delivery to the carrier. Unless Buyer has designated a carrier, Seller will select the carrier with the express understanding that the carrier is not the agent of the Seller. The carrier shall be deemed to be the agent of the Buyer. The Seller may ship your order in one or more installments, which Buyer agrees to accept and pay for, unless Buyer has provided Seller with prior written notification that Buyer will not accept partial shipments.

##### Limited Warranty

Seller warrants to Buyer, as original owner, that goods to be supplied under this Agreement will conform to the description of any purchase order and will be free from defects in materials and workmanship. This warranty will be valid for a period of 1 year. Buyer's exclusive remedy against Seller for any defects in materials or workmanship shall be the replacement or repair of the defective goods, or the repayment of the purchase price upon return of the goods. Goods may be returned at the cost of Seller only after an inspection and approval by Seller and upon receipt by Buyer of definite shipping instructions from Seller. No back charging by Buyer is allowed for repair work done by Buyer, unless authorized in writing by Seller. Every claim on account of defective goods, short count, or for any other cause, shall be deemed waived by Buyer unless made in writing within thirty (30) days from the date of shipment of goods to which such claim relates. This warranty does not apply to goods that have been damaged by abuse, accident, act of God, misuse, misapplication, improper installation, or shipment, or that have been modified by the Buyer. This warranty is in lieu of and Seller disclaims all other warranties, express, implied, or otherwise including without limitation, any warranty of merchantability, fitness for a particular purpose, or non infringement. No oral or written information or advice given by Seller or its agents will create a warranty or increase the scope of this warranty. In no event will Seller be liable to Buyer for exemplary, incidental, indirect, special or consequential damages of any kind, including without limitation loss of profit, good will, use, savings, revenue or property damage, whether or not Seller has been advised of the possibility of such loss, however caused and on any other theory of liability arising out of these terms and conditions, sale or use of goods, or Buyer's relationship with Seller. Seller's liability arising out of these terms and conditions, sale or use of goods, or Buyer's relationship with Seller, including without limitation, any and all claims combined, will not exceed the amount of the purchase price for the goods and services provided. In no event will Seller be liable for the costs of procurement of substitute goods by Buyer or any other person or entity. The limitations in this section will apply notwithstanding the failure of essential purpose of any limited remedy.

##### Indemnification

Except to the extent caused by Seller's breach of warranty, Buyer shall indemnify and hold harmless Seller, its employees, officers and directors, and their respective successors and assigns from and against any and all liability, damages, claims, causes of actions, losses, costs and expenses (including attorneys fees) of any kind (collective "Damages") arising out of injuries to any person (including death) or damage to any property caused by or related to the goods or any negligent act or omission of Buyer, its employees or agents. Buyer shall defend at its own expense and indemnify and hold harmless Seller and each of its agents from and against any and all Damages and claims of patent infringement or trade secret misappropriation arising from Seller's performance under this contract or by reason of any sale or use of goods or the manufacture of goods to Buyer specifications or sample. Upon the tendering of any of the foregoing suits or claims to Buyer, Buyer shall defend the same at Buyer's expense. The foregoing obligations of Buyer shall apply whether Seller or Buyer defends such suit or claim.

##### Cancellation

In the event Buyer requests Seller to stop work or cancel the order or any part thereof, there shall be a minimum cancellation charge of 15% of the invoice amount of this cancelled order. Work already scheduled, in progress or completed will be billed at cost incurred plus a 15% handling charge.

##### Customer Supplied Materials

In the event this contract requires the Seller to perform work on materials supplied by Buyer, Buyer shall supply adequate excess to allow for manufacturing losses. If Seller scraps any such material, it shall not be liable to Buyer for such scrapped materials.

##### Salvage

Seller reserves the right to determine whether or not products shipped to us are salvageable.

##### Complete Agreement

This document constitutes the entire agreement between the Buyer and Seller with respect to the subject matter hereof and supersedes all other representations or understandings. The terms and conditions contained herein may not be added to, modified, or superseded or otherwise altered except by a written modification signed by a duly authorized officer of the Seller. If any provisions of this agreement shall be deemed invalid by a court of law, the remaining provisions shall continue in full force and effect, and shall be construed to serve the intent and purposes of this agreement.

##### Jurisdiction

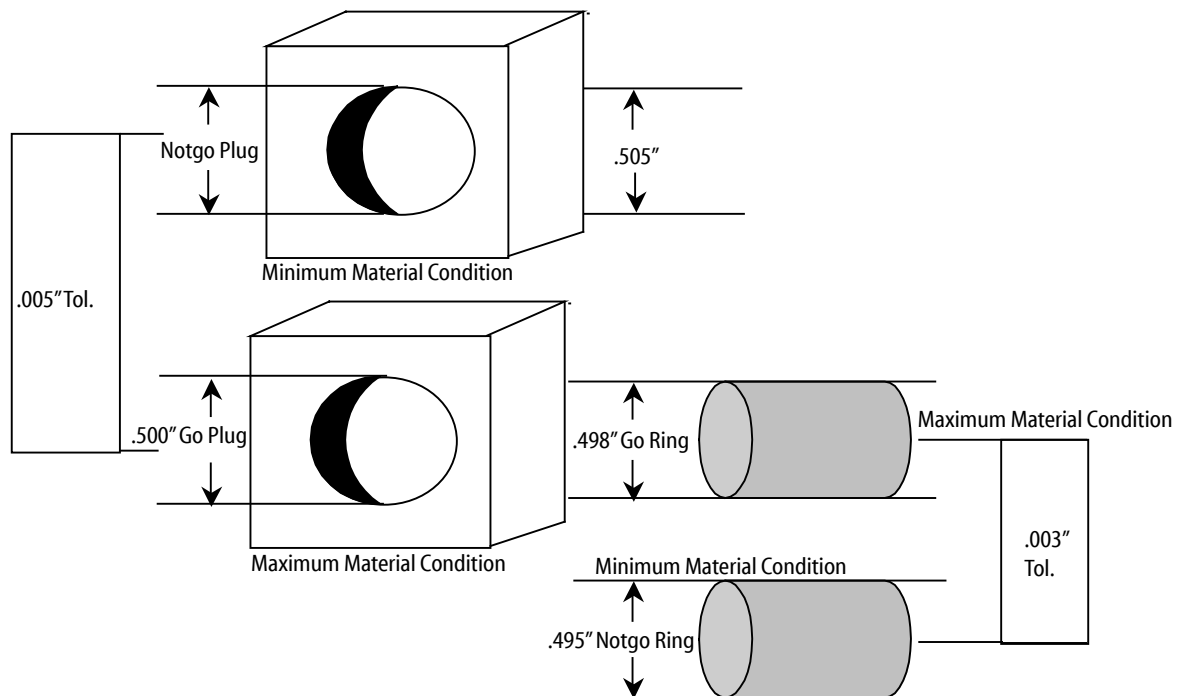
The terms and conditions applicable to the transaction provided for herein shall be determined and construed in accordance with, and shall be governed by, the laws of the State of Michigan. Buyer and Seller agree to submit to the jurisdiction of the appropriate State or Federal Court within Michigan for purposes of resolving any dispute or claim arising in connection with said transaction.

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.**



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

- 1.) A good rule of thumb to follow is to allow the gages to consume no 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.

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.
- Whitworth
- Solid thread rings



- Hi-Lo Master Setting Plugs
- Tapered Threads
- Special Pipe
- Precision Production Thread Grinding
- Size Range: #00 to 14"
- 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.

How to order Special Thread Plug Gages												
Thread Plug Gage	Qty	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options	
			Series	Class	Condition	Handles	Type	Tolerance	Certification		Extended Lead, 90° Threads, Multi-Lead. Left Hand.	Special Colored Handle. Special Length. Special Marking.
			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 Trilock Reversible	"X" "W"	Compliance Long Form ISO 17025			
Example	1	3/8-16	UNC	2B	HI	M/O	TAPL		Long Form	.3401		
							Note 1	Note 5	Note 6	Note 2	Note 4	

How to order Thread Ring Gages & Master Set Plugs											
Thread Rings & Master Setting Plugs	Qty	Nominal Size & T.P.I.	Select One						Pitch Diameter	Ring Options	Set Plug Options
			Series	Class	Condition	Holder	Tolerance	Certification			
			UNC UNF UNEF UNS Acme Mod. Buttress. British Whitworth DIN/JIS	1, 1A, 2, 2A, 3, 3A, 2C, 3C, 2G, 3G,	Go or NoGo (Lo)		"X" "W"	Compliance Long Form ISO 17025			
Example	1	3/8-16	UNC	2A	Go	M/O	X	Long Form	.3331		
							Note 5	Note 6	Note 2, 3	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 20-22.
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 4 for explanation of HEMCO Standard and ISO 17025 Certifications.



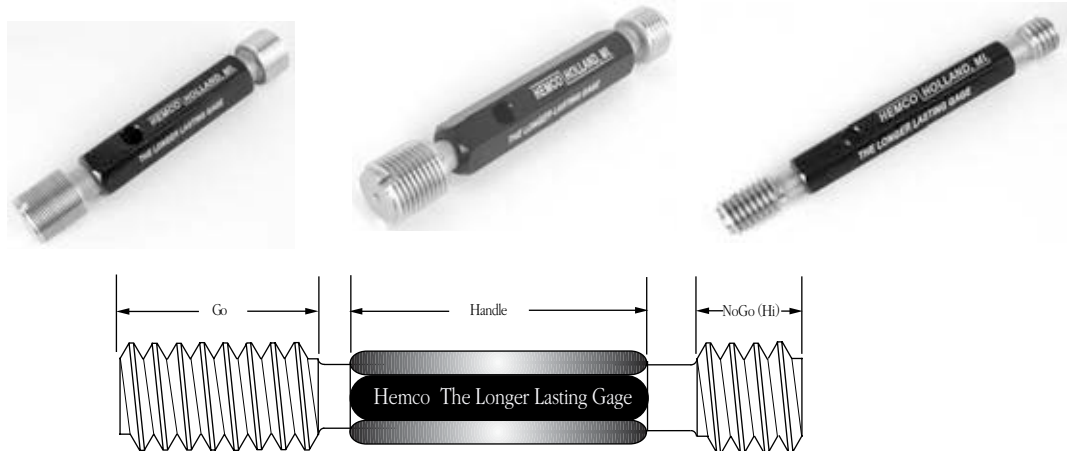
# Taperlock Thread Plug Gages

HEMCO

HEMCOChrome Process

Machine Screw, Fractional & Metric Sizes

- ❑ All gages are made to ASME Std. B47.1 and Screw Thread Standards for Federal services: Fed. Std. H28 and ANSI/ASME 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 larger than .150" have female centers. Members equal to .150" or smaller have male centers.
- ❑ Members 32 TPI and coarser are convoluted and have chip grooves. Members finer than 32 TPI are chamfered.



Taperlock Thread Plug Basic Dimensions												
No. or Fractional		Decimal		Metric		TPI	General Dimensions					
From	To & Including	From	To & Including	From	To & Including	*** TPI Less Than	Go member length	NoGo (HI) member length	Handle no.	Handle length	Width Across Flats	Width Across Hex
#0	#3	.060	.0990	M1.6	M2.5	81	1/4	3/16	000	1-1/2	1/4	-
#4	#6	.1120	.1380	M3	M3.5	61	5/16	7/32	00	1-3/4	1/4	-
#8	#12	.1640	.2160	M4	M5	49	13/32	9/32	0	2	5/16	-
1/4	5/16	.250	.3125	M6	M8	41	1/2	5/16	1	2-3/4	3/8	.433
3/8	1/2	.375	.500	M10	M12	37	3/4	3/8	2	3	1/2	.577
9/16	3/4	.5625	.750	M14	M20	33	7/8	1/2	3	3-1/4	11/16	.794
7/8	1-1/8	.875	1.125	M24	M29	29	1	5/8	4	3-5/8	7/8	1.010
1-1/4	1-1/2	1.250	1.500	M30	M38	29	1-1/4*	3/4	5	4	1"	1.155
1-1/4	1-1/2	1.250	1.500	M30	M38	29	1**	3/4	5	4	1"	1.155

\* Coarser than 12 TPI \*\* 12 TPI and finer ASME Std B47.1 \*\*\* See Table 22 ASME B47.1

## How to order Taperlock Thread Plug Gages

Taperlock	Qty	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options	
			Series	Class	Condition	Handles	Type	Tolerance	Certification		Extended Lead, 90° Threads, Multi-Lead. Left Hand.	Special Colored Handle. Special Length. Special Marking.
			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 Long Form ISO 17025			
Example	1	3/8-16	UNC	2B	HI	M/O	TAPL	Note 1	Note 5	Note 6	Note 2	Note 4

**Notes:**

1. Unless specified, standard gage gage handles are black anodized. Metric gage handles are yellow anodized.
2. For Standard Pitch Diameters, consult charts on pages 20-22.
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 4 for explanation of HEMCO Standard and ISO 17025 Certifications.

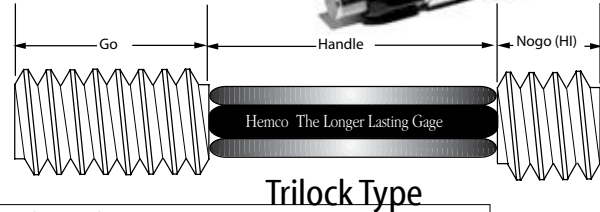
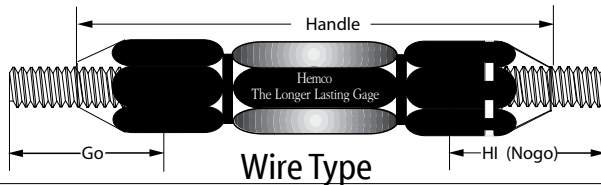
# Reversible Thread Plug Gages

HemcoChrome Process

**HEMCO**

## Fractional Inch and Metric Ranges

- ❑ All gages are made to ASME Std. B47.1 and Screw Thread Standards for Federal services: Fed. Std. H28 and ANSI/ASME B1.2 and B1.16M.
- ❑ 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 larger than .150" have female centers. Members equal to .150" or smaller have male centers.
- ❑ Members 32 TPI and coarser are convoluted and have chip grooves. Members finer than 32 TPI are chamfered.
- ❑ 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.



Reversible Thread Plugs Basic Dimensions

Nominal Range						Style	Go Lengths			NoGo Lengths	Handle No	Handle Length
# or Fraction		Decimal		Metric			7 TPI & Coarser	8 TPI thru 15 TPI	13 TPI & Finer	All TPI		
From	To & Including	From	To & Including	From	To & Including					All TPI		
#0	#1	.060	.0730	M1.6	M1.8	Wire type	1/2	1/2	1/2	1/2	1W	2-1/4
#2	#5	.0860	.1250	M2	M3	Wire type	5/8	5/8	5/8	5/8	2W	2-11/16
#6	#8	.1380	.1640	M3.5	M4.5	Wire type	3/4	3/4	3/4	3/4	2W	2-11/16
#10	1/4	.1900	.2500	M5	M7	Wire type	7/8	7/8	7/8	7/8	3W	3-5/16
1/4	5/16	.250	.3125	M8	M8	Wire type	1	1	1	1	4W	3-9/16
5/16	3/8	.3125	.375	M9	M10	Wire type	1-1/8	1-1/8	1-1/8	1-1/8	4W	3-9/16
3/8	7/16	.375	.4375	M11	M11	Wire type	1-1/8	1-1/8	1-1/4	1-1/4	5W	4-1/4
7/16	1/2	.4375	.500	M12	M12	Wire type	1-3/8	1-3/8	1-3/8	1-3/8	5W	4-1/4
1/2	5/8	.500	.6250	M13	M16	Wire type	1-1/2	1-1/2	1-1/2	1-3/8	6W	4-1/2
5/8	3/4	.6250	.750	M17	M19	Wire type	1-3/4	1-3/4	1-3/4	1-3/8	7W	4-1/2
3/4	15/16	.7500	.9375	M20	M24	Trilock	1-1/4	1	1	3/4	2-1/2	4
15/16	1-1/8	.9375	1.1250	M25	M28	Trilock	1-3/8	1-1/8	1	3/4	3-1/2	4
1-1/8	1-1/2	1.1250	1.500	M29	M38	Trilock	1-1/2	1-1/4	1	3/4	4-1/2	4
1-1/2	2	1.500	2.000	M39	M51	Trilock	1-7/8	1-1/4	7/8	7/8	5-1/2	4-1/2
2	2-1/2	2.000	2.500	M52	M63	Trilock	2	1-3/8	7/8	7/8	6	5
2-1/2	3	2.500	3.00	M64	M76	Trilock	2-1/8	1-1/2	1	1	7	6
3	3-1/2	3.00	3.50	M77	M89	Trilock	2-1/8	1-1/2	1	1	7	6
3-1/2	4	3.50	4.00	M90	M101	Trilock	2-1/8	1-1/2	1	1	7	6
4	4-1/2	4.00	4.500	M102	M114	Trilock	2-1/8	1-1/2	1	1	7	6
4-1/2	5	4.500	5.00	M115	M127	Trilock	2-1/8	1-1/2	1	1	7	6
5	8	5.00	8.00	M128	M203	Trilock	2-1/8	1-1/2	1	1	7	6
8	12	8.00	12.00	M204	M305	Trilock	2-1/4	1-1/2	1	1	Ball type	

## How to order Reversible Thread Plug Gages

Reversible	Qty	Nominal Size & T.P.I.	Select One							Pitch Diameter	Special Options		
			Series	Class	Condition	Handles	Type	Tolerance	Certification		Extended Lead, 90° Threads, Multi-Lead, Left Hand.	Special Colored Handle, Special Length, Special Marking.	
			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.	Reversible	"X" "W"	Compliance Long Form ISO 17025				
Example	1	3/8-16		2B	HI	M/O	Reversible			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 20-22.
  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 4 for explanation of HEMCO Standard and ISO 17025 Certifications.



Lic # 5B-0009  
 Lic # 7-2-0081  
 Lic # 11B-0013

# American Petroleum Institute

## Working & Master Gages

# HEMCO

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 licensed by the Institute to use the A.P.I. monogram on all the API Spec 5B, Spec 7-2 and Spec 11B Master gages we manufacture.

### HemcoChrome Process:

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



Regular Rotary Plug & Ring



External Upset Tubing Plug & Ring



Round Casing Plug & Ring

API Specification & Other Connections				
Specification	Type	Size Range	Threads Per Inch	Taper per foot
Spec 5B	Buttress Casing (BUTTRESS CSG)	4-1/2 thru 13-3/8	5	3/4" taper
	External Upset (UP TBG)	1.050 thru 1.900	10	
	External Upset (UP TBG)	2-3/8 thru 4-1/2	8	
	Non-Upset Tubing (TBG)	1.050 thru 3-1/2	10	
	Non-Upset Tubing (TBG)	4", 4-1/2"	8	
	Round Casing (CSG)	4-1/2 thru 13-3/8	8	
Spec 7-2	Standard Line Pipe (LP)	1/8 thru 12	27 thru 8 TPI	
	Numbered Connections	NC23 thru NC50	4	2" taper
	Numbered Connections	NC56 thru NC70	4	3" taper
	Regular Rotary (left hand also)	6-5/8"	4	2" taper
	Regular Rotary (left hand also)	5-1/2, 7-5/8, 8-5/8	4	3" taper
	Regular Rotary (left hand also)	2-3/8 thru 4-1/2	5	3" taper
	Regular Rotary (left hand also)	1", 1-1/2"	6	1-1/2 taper
Spec 11B	Full Hole	5-1/2, 6-5/8	4	2" taper
	Sucker Rods	5/8" thru 1-1/8"	10	Not tapered
Spec 11AX	B Connection	178	11.5	3/8" taper
	B Connection	225, 275	11.5	3/4" taper
	L Connection	3/8, 1/2, 3/4"	18, 14, 14	3/4 taper
Spec 6A	Non-Upset Sharp Vee (VR Thds)	1-1/2 thru 3"	11.5	3/4 taper
Other Connections	Buttress Tubing (Improved)	2-3/8, 2-7/8, 3-1/2	8	3/4 taper
	Extra Hole	2-7/8 & 3-1/2	4	2" taper
	Full Hole	2-7/8, 3-1/2, 4-1/2	5	3" taper
	Full Hole (left hand)	5-1/2, 6-5/8	4	2" taper
	Internal Flush (left hand also)	5-1/2, 6-5/8	4	2" taper
	PAC Tools	2-3/8, 2-7/8	4	1-1/2 taper
	Regular H90	3-1/2 thru 8-5/8	3.5	2" taper
	Slimline H90	2-3/8, 2-7/8, 3-1/2	3	1-1/4 taper



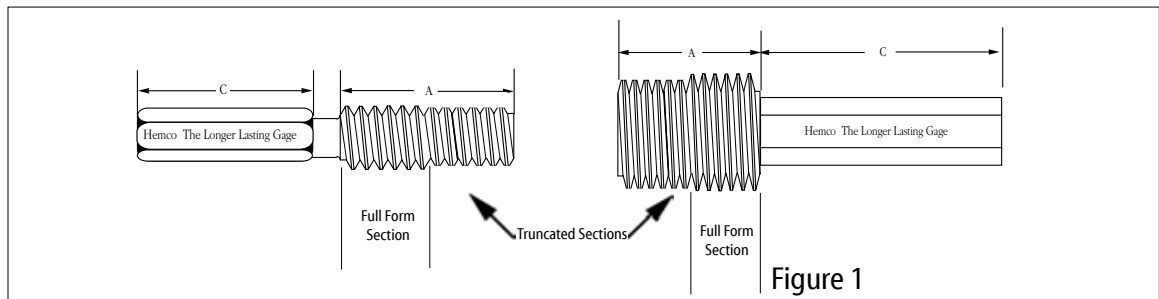
Standard Line Pipe Plug & Ring



Buttress Casing Plug & Ring

## 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)



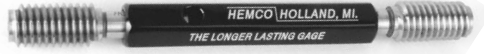
4. Turn the adjustment screw counter clockwise. Now rotate ring on master plug until there is a slight drag between them. Tighten the locking screw. The ring should exhibit a larger degree of drag or snug fit to the master. This operation may have to be repeated to obtain the proper degree of drag. The 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 5) 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 4)
8. The minor diameter of the ring can be measured with an internal measuring device 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 ASME Std. B47.1 and Screw Thread Standards for Federal services: Fed. Std. H28 and ANSI/ASME B1.2 and B1.16M.
- ❑ 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
.0590	.0900	1.5	2.29	Taperlock	7/32	-	0	1-T	1	1/4	-
.0900	.1050	2.29	2.67	Taperlock	3/8	-	0	1-T	1	1/4	-
.1050	.1500	2.67	3.81	Taperlock	3/8	-	0	1-T	1	1/4	-
.1500	.2300	3.81	5.84	Taperlock	13/32	-	0	1-T	1	1/4	-
.2300	.3650	5.84	9.27	Taperlock	3/4	-	1	2-T	1-3/8	11/32	-
.3650	.5100	9.27	12.95	Taperlock	1	-	2	3-T	1-3/4	7/16	-
.5100	.8250	12.95	20.96	Taperlock	1-1/4	1-7/8	3	4-T	2-3/16	9/16	3/4
.8250	1.1350	20.96	28.83	Taperlock	1-1/2	2-1/8	4	5-T	2-5/8	11/16	15/16
1.1350	1.5100	28.83	38.35	Taperlock	1-5/8	2-3/8	5	6-T	3-1/4	3/4	1-1/8
1.5100	2.0100	38.35	51.05	Trilock	1-7/8	2-7/8	5.5	7-T	3-3/4	13/16	1-1/4
2.0100	2.5100	51.05	63.75	Trilock	2	3	6	8-T	4-1/2	7/8	1-5/16
2.5100	3.0100	63.75	76.45	Trilock	2	3-1/8	7	9-T	5	7/8	1-3/8
3.0100	3.5100	76.45	89.15	Trilock	2	3-1/8	7	10-T	5-1/2	15/16	1-7/16
3.5100	4.0100	89.15	101.85	Trilock	2-1/8	3-1/4	7	11-T	6-3/8	15/16	1-1/2
4.0100	4.7600	101.9	120.90	Trilock	2-1/8	3-1/4	7	12-T	7-1/4	1	1-1/2
4.7600	5.5100	120.90	139.95	Trilock	2-1/8	3-1/4	7	13-T	8-1/4	1	1-1/2
5.5100	6.2600	140	159.00	Trilock	2-1/8	3-1/4	7	14-T	9-1/4	1	1-1/2
6.2600	7.0100	159.00	178.05	Trilock	2-1/8	3-1/4	7	15-T	10-1/4	1	1-1/2
7.0100	7.7600	178.1	197.10	Trilock	2-1/8	3-1/4	7	16-T	11-1/4	1	1-1/2
7.7600	8.5100	197.10	216.15	Annular	2-1/8	3-1/4	Ball	17-T	12-1/4	1	1-1/2
8.5100	9.2600	216.2	235.20	Annular	2-1/8	3-1/4	Ball	18-T	13-1/4	1	1-1/2
9.2600	10.0100	235.20	254.25	Annular	2-1/8	3-1/4	Ball	19-T	14-1/4	1	1-1/2
10.0100	10.7600	254.3	273.30	Annular	2-1/8	3-1/4	Ball	20-T	15-1/4	1	1-1/2
10.7600	11.5100	273.30	292.35	Annular	2-1/8	3-1/4	Ball	21-T	16-1/4	1	1-1/2
11.5100	12.2600	292.4	311.40	Annular	2-1/8	3-1/4	Ball	22-T	17-1/4	1	1-1/2
Diameter				Thin Blank				Thick Blank			
From #0 to 1/2" Inclusive				All Pitches				Not Applicable			
From 1/2" to 1-1/8" Inclusive				12 TPI and finer except for 9/16-12				12 TPI and coarser			
Above 1-1/8"				10 TPI and finer				10 TPI and coarser			

How to order Thread Ring Gages & Master Set Plugs											
Thread Rings & Master Setting Plugs	Qty	Nominal Size & T.P.I.	Select One						Pitch Diameter	Ring Options	Set Plug Options
			Series	Class	Condition	Holder	Tolerance	Certification			
			UNC UNF UNEF UNS Acme Mod. Buttress. British Whitworth DIN/JIS	1, 1A, 2, 2A, 3, 3A, 2C, 3C, 2G, 3G,	Go or NoGo (Lo)		"X" "W"	Compliance Long Form ISO 17025			
Example	1	3/8-16	UNC	2A	Go	M/O	X	Long Form	.3331		
							Note 5	Note 6	Note 2, 3	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 20 - 22  
 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 4 for explanation of HEMCO Standard and ISO 17025 Certifications.

# Pipe Threads: General Purpose

NPT - National Pipe Taper Reference ANSI/ASME B1.20.1

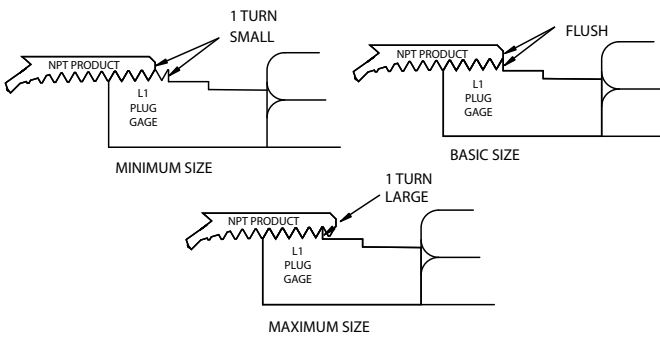
NPT Tapered threads require the inspection of the L1 portion of the product threads with a plug or ring gage.

The proper use of these gages include.:

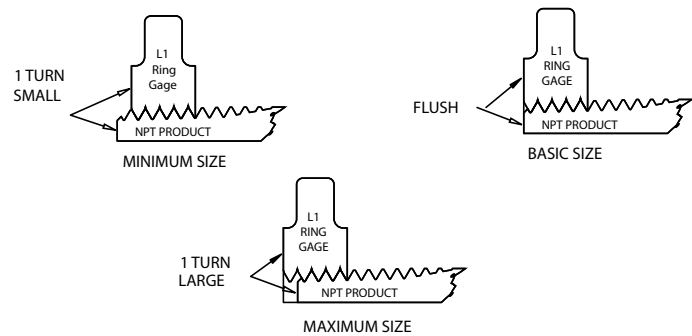
- ❑ Maintaining calibrated clean and undamaged gages.
- ❑ Making sure the product thread is clean and free of burrs.
- ❑ The gage is to be applied to the product with HAND TIGHT engagement.



- ❑ 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 has a chamfer that exceeds the major diameter, the reference plane is 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 L2, L3 and 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	BSPT Thread Plug/Plain Plug	BSPT Thread Ring/Plain Plug
BSPP	Go & NotGo Plug Gages	Go & NotGo Ring Gages

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

National Pipe Straight Mechanical (NPSM) ANSI/ASME B1.20.1-1983				
Nom. Size & Pitch	Thread Plugs		Rings & Set Plugs	
	Go P.D.	HI P.D.	Go P.D.	Lo P.D.
Size				
1/8-27	.3736	.3783	.3725	.3689
1/4-18	.4916	.4974	.4903	.4859
3/8-18	.6270	.6329	.6256	.6211
1/2-14	.7784	.7851	.7769	.7718
3/4-14	.9889	.9958	.9873	.9820
1"-11-1/2	1.2386	1.2462	1.2369	1.2311
1-1/4-11-1/2	1.5834	1.5912	1.5816	1.5756
1-1/2-11-1/2	1.8223	1.8302	1.8205	1.8144
2"-11-1/2	2.2963	2.3044	2.2944	2.2882
2-1/2-8	2.7622	2.7720	2.7600	2.7526
3"-8	3.3885	3.3984	3.3862	3.3786
3 1/2-8	3.8888	3.8988	3.8865	3.8788
4"-8	4.3871	4.3971	4.3848	4.3771
5"-8	5.4493	5.5498	5.4469	5.4390
6"-8	6.5060	6.5165	6.5036	6.4955

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 & Not-Go Straight Gages are not recommended for size acceptance"

British Standard Pipe Parallel BS EN ISO 228 ("G")												
BSPP Plugs					BSPP Class A Rings & Set Plugs				BSPP Class B Rings & Set Plugs			
SIZE	GO PD Inch	GO PD Metric	HI PD Inch	HI PD Metric	Go PD Inch	Go Pd Metric	NotGo PD Inch	NotGo PD Metric	Go PD Inch	Go PD Metric	NotGo PD Inch	NotGo PD Metric
1/8-28	.36024	9.150	.36472	9.264	.36035	9.153	.35531	9.025	.36035	9.153	.35071	8.908
1/4-19	.48441	12.304	.48961	12.436	.48453	12.307	.47878	12.161	.48453	12.307	.47346	12.026
3/8-19	.62240	15.809	.62760	15.941	.62252	15.812	.61677	15.666	.62252	15.812	.61146	15.531
1/2-14	.77953	19.800	.78531	19.947	.77929	19.794	.77287	19.631	.77929	19.794	.76709	19.484
3/4-14	.99551	25.286	1.00130	25.433	.99528	25.280	.98886	25.117	.99528	25.280	.98307	24.970
1-11	1.25106	31.777	1.25835	31.962	1.25083	31.771	1.24291	31.570	1.25083	31.771	1.23531	31.377
1-1/4-11	1.59205	40.438	1.59933	40.623	1.59181	40.432	1.58390	40.231	1.59181	40.432	1.57630	40.038
1-1/2-11	1.82406	46.331	1.83134	46.516	1.82382	46.325	1.81591	46.124	1.82382	46.325	1.80831	45.931
2-11	2.28906	58.142	2.29634	58.327	2.28882	58.136	2.28091	57.935	2.28882	58.136	2.27331	57.742
2-1/2-11	2.90220	73.716	2.91091	73.937	2.90177	73.705	2.89224	73.463	2.90177	73.705	2.88339	73.238
3-11	3.40220	86.416	3.41091	86.637	3.40177	86.405	3.39224	86.163	3.40177	86.405	3.38339	85.938

Threads are truncated .14784P and Root Cleared. Min/Max P.D. Limits of product are different per BS2779:1986

BSPT Pitch Diameters (R, Rc/Rp)		
Size	Inch 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
2-11	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

# Function & Use of Dryseal Gaging

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. The crest and 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.

<p>1. L1 Plug &amp; Ring gage the functional size of the portion of the products thread that comes in contact with its mating part at hand-tight engagement.</p>	
<p>2. L3 Plug &amp; 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.</p>	
<p>3. Crest Check Plug &amp; 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.</p>	
<p>4. Root Check Plug &amp; 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.</p>	

### 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:

<u>Internal threads:</u>	Minimum size = out 1 turn	<u>External threads:</u>	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 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.
  - Make 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 pitch and crest diameter of the product. The process of gaging ANPT threads is basically the same as the NPTF system. The process is reversed for Rings - the L2 is used first and the L1 is a relationship gage.

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 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

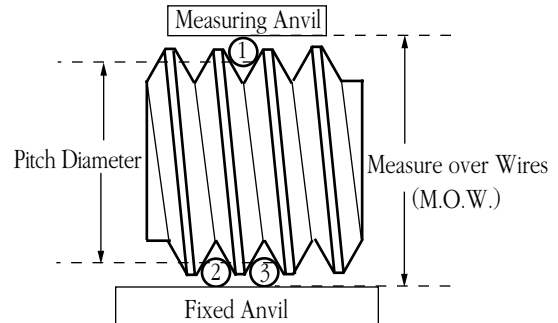
Screw Thread Insert Plug Gages, Go and NoGo, are specified whenever a wire insert is used to repair a damaged thread or provide for a stronger thread to mating thread application. These gages are designed to check the oversize thread condition needed to allow the wire insert to maintain a standard pitch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

STI (Screw Thread Insert) Gages							
Size & TPI	Basic Go Pitch Diameter	Class 2B HI (Nogo) Pitch Diameter	Class 3B HI (Nogo) Pitch Diameter	Size & TPI	Basic Go Pitch Diameter	Class 2B HI (Nogo) Pitch Diameter	Class 3B HI (Nogo) Pitch Diameter
#2-56 UNC	.0976	.0996	.0989	5/16-18 UNC	.3486	.3529	.3515
#3-48 UNC	.1126	.1148	.1140	5/16-24 UNF	.3395	.3433	.3421
#4-40 UNC	.1283	.1308	.1299	3/8-16 UNC	.4156	.4203	.4189
#4-48 UNC	.1256	.1279	.1271	3/8-24 UNF	.4020	.4059	.4047
#5-40 UNC	.1413	.1438	.1430	7/16-14 UNC	.4839	.4890	.4875
#6-32 UNC	.1583	.1611	.1601	7/16-20 UNF	.4700	.4744	.4731
#6-40 UNF	.1543	.1569	.1560	1/2-13 UNC	.5499	.5554	.5537
#8-32 UNC	.1843	.1872	.1862	1/2-20 UNF	.5325	.5731	.5357
#8-36 UNF	.1821	.1849	.1840	9/16-12 UNC	.6167	.6225	.6208
#10-24 UNC	.2170	.2203	.2192	9/16-18 UNF	.5986	.6035	.6020
#10-32 UNF	.2103	.2133	.2123	5/8-11 UNC	.6841	.6903	.6885
#12-24 UNC	.2430	.2464	.2453	5/8-18 UNF	.6611	.6661	.6646
1/4-20 UNC	.2825	.2864	.2851	3/4-10 UNC	.8149	.8216	.8196
1/4-28 UNF	.2732	.2765	.2754	3/4-16 UNF	.7906	.7961	.7945

## 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									W Tolerance											
Pitch Diameter					Major & Minor		Half Angle	Lead	Pitch Diameter					Major & Minor		Half Angle	Lead			
Threads per Inch	To & Incl. 1-1/2"	Above 1-1/2" to 4"	Above 4" to 8"	Above 8" to 12"	To 4" Incl.	Above 4"	Tol +/-	Tol +/-	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	.0002				.0003		30	.0002	80	.0001	.00015				.0003	.0003		20	.0001	.00015
72	.0002				.0003		30	.0002	72	.0001	.00015				.0003	.0003		20	.0001	.00015
64	.0002				.0004		30	.0002	64	.0001	.00015				.0003	.0004		20	.0001	.00015
56	.0002	.0003			.0004		30	.0002	56	.0001	.00015	.0002			.0003	.0004		20	.0001	.00015
48	.0002	.0003			.0004		30	.0002	48	.0001	.00015	.0002			.0003	.0004		18	.0001	.00015
44	.0002	.0003			.0004		20	.0002	44	.0001	.00015	.0002			.0003	.0004		15	.0001	.00015
40	.0002	.0003			.0004		20	.0002	40	.0001	.00015	.0002			.0003	.0004		15	.0001	.00015
36	.0002	.0003			.0004		20	.0002	36	.0001	.00015	.0002			.0003	.0004		12	.0001	.00015
32	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003	32	.0001	.00015	.0002	.00025	.0003	.0003	.0005	.0007	12	.0001	.00015
28	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003	28	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
27	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003	27	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
24	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003	24	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
20	.0003	.0004	.0005	.0006	.0005	.0007	15	.0003	20	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
18	.0003	.0004	.0005	.0006	.0005	.0007	10	.0003	18	.0001	.00015	.0002	.00025	.0003	.0005	.0005	.0007	8	.00015	.00015
16	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	16	.0001	.0002	.00025	.0003	.0004	.0006	.0006	.0009	8	.00015	.00015
14	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	14	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
13	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	13	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
12	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	12	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
11.5	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	11.5	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
11	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	11	.00015	.0002	.00025	.0003	.0004	.0006	.0006	.0009	6	.0002	.0002
10	.0003	.0004	.0006	.0008	.0006	.0009	10	.0003	10		.0002	.00025	.0003	.0004		.0006	.0009	6		.00025
9	.0003	.0004	.0006	.0008	.0007	.0011	10	.0003	9		.0002	.00025	.0003	.0004		.0007	.0011	6		.00025
8	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004	8		.0002	.00025	.0003	.0004		.0007	.0011	5		.00025
7	.0004	.0005	.0006	.0008	.0007	.0011	5	.0004	7		.0002	.00025	.0003	.0004		.0007	.0011	5		.0003
6	.0004	.0005	.0006	.0008	.0008	.0013	5	.0004	6		.0002	.00025	.0003	.0004		.0008	.0013	5		.0003
5		.0005	.0006	.0008	.0008	.0013	5	.0004	5			.00025	.0003	.0004		.0008	.0013	4		.0003
4.5		.0005	.0006	.0008	.0008	.0013	5	.0004	4.5			.00025	.0003	.0004		.0008	.0013	4		.0003
4		.0005	.0006	.0008	.0009	.0015	5	.0004	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
0.016	0.825	0.4	20.95	.00002	.00004	.00007	.00010	.00020
0.825	1.51	20.95	38.35	.00003	.00006	.00009	.00012	.00024
1.51	2.51	38.35	63.75	.00004	.00008	.00012	.00016	.00032
2.51	4.51	63.75	114.55	.00005	.00010	.00015	.00020	.00040
4.51	6.51	114.55	165.35	.00007	.00013	.00019	.00025	.00050
6.51	9.01	165.35	228.85	.00008	.00016	.00024	.00032	.00064
9.01	12.01	228.85	305.05	.00010	.00020	.00030	.00040	.00080

Direction of Tolerance	
Cylindrical Rings	Go: Minus Tolerance
	Notgo: (Nogo) Plus Tolerance
	Master: Bilateral 1/2 Plus 1/2 Minus
Cylindrical Plugs	Go: Plus Tolerance
	Notgo: (Nogo) Minus Tolerance
Master Disc	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



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	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	.4154	.4142	.4104	.4075	.4092	.4053
		28	UNEF	.4143	.4189	.4178	.4143	.4116	.4132	.4096
1/2	.5000	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
13/16	.8125	32	UN	.7297	.7344	.7333	.7297	.7270	.7286	.7250
		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



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	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
15/16	.9375	20	UNEF	.8425	.8482	.8468	.8425	.8392	.8412	.8368
		16	UN	.8969	.9034	.9018	.8969	.8932	.8954	.8904
		20	UNEF	.9050	.9109	.9094	.9050	.9016	.9036	.8991
		8	UNC	.9188	.9276	.9254	.9188	.9137	.9168	.9100
1"	1.0000	12	UNF	.9459	.9535	.9516	.9459	.9415	.9441	.9382
		14	UNS	.9536	.9605	.9588	.9536	.9496	.9520	.9467
		16	UNS	.9594	.9659	.9643	.9594	.9557	.9579	.9529
		18	UNS	.9639	.9701	.9685	.9639	.9603	.9625	.9578
1-1/16	1.0625	20	UNEF	.9675	.9734	.9719	.9675	.9641	.9661	.9616
		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
		7	UNC	1.0322	1.0416	1.0393	1.0322	1.0268	1.0300	1.0228
1-1/8	1.1250	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
1-5/16	1.3125	18	UNEF	1.2139	1.2202	1.2186	1.2139	1.2103	1.2124	1.2075
		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
		6	UNC	1.2667	1.2771	1.2745	1.2667	1.2607	1.2643	1.2563
1-3/8	1.3750	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
1-9/16	1.5625	18	UNEF	1.4639	1.4704	1.4687	1.4639	1.4602	1.4624	1.4574
		8	UN	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
		12	UN	1.6334	1.6412	1.6392	1.6334	1.6289	1.6316	1.6256
1-11/16	1.6875	16	UN	1.6469	1.6538	1.6521	1.6469	1.6429	1.6453	1.6400
		18	UNEF	1.6514	1.6580	1.6563	1.6514	1.6476	1.6499	1.6448
		8	UN	1.6688	1.6786	1.6762	1.6688	1.6631	1.6656	1.6590
1-3/4	1.7500	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:**  
6H Work Plugs & 6g Thread Rings & Set Plugs.

**HEMCO**

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	1.373	.05406	1.458	.05740	1.354	.05331	1.291	.05083
M2 X .4	1.740	.06850	1.830	.07205	1.721	.06776	1.654	.06512
M2.5 X .45	2.208	.08693	2.303	.09067	2.188	.08614	2.117	.08335
M3 X .5	2.675	.10531	2.775	.10925	2.655	.10453	2.580	.10157
M3.5 X .6	3.110	.12244	3.222	.12685	3.089	.12161	3.004	.11827
M4 X .7	3.545	.13957	3.663	.14421	3.523	.13870	3.433	.13516
M5 X .8	4.480	.17638	4.605	.18130	4.456	.17543	4.361	.17169
M6 X 1	5.350	.21063	5.500	.21654	5.324	.20961	5.212	.20520
M7 X 1	6.350	.25000	6.500	.25591	6.324	.24898	6.212	.24457
M8 X 1.25	7.188	.28299	7.348	.28929	7.160	.28189	7.042	.27724
M8 X 1	7.350	.28937	7.500	.29528	7.324	.28835	7.212	.28394
M10 X 1.5	9.026	.35535	9.206	.36244	8.994	.35409	8.862	.34890
M10 X 1.25	9.188	.36173	9.348	.36803	9.160	.36063	9.042	.35598
M10 X 1	9.350	.36811	9.500	.37402	9.324	.36709	9.212	.36268
M10 X .75	9.513	.37453	9.645	.37972	9.491	.37366	9.391	.36972
M12 X 1.75	10.863	.42768	11.063	.43555	10.829	.42634	10.679	.42043
M12 X 1.5	11.026	.43409	11.216	.44157	10.994	.43283	10.854	.42732
M12 X 1.25	11.188	.44047	11.368	.44756	11.160	.43937	11.028	.43417
M12 X 1	11.350	.44685	11.510	.45315	11.324	.44583	11.206	.44118
M14 X 2	12.701	.50004	12.913	.50839	12.663	.49854	12.503	.49224
M14 X 1.5	13.026	.51283	13.216	.52031	12.994	.51157	12.854	.50606
M14 X 1	13.350	.52559	13.510	.53189	13.324	.52457	13.206	.51992
M15 X 1	14.350	.56496	14.510	.57126	14.324	.56394	14.206	.55929
M16 X 2	14.701	.57878	14.913	.58713	14.663	.57728	14.503	.57098
M16 X 1.5	15.026	.59157	15.216	.59906	14.994	.59031	14.854	.58480
M16 X 1	15.350	.60433	15.510	.61063	15.324	.60331	15.206	.59866
M17 X 1	16.350	.64370	16.510	.65000	16.324	.64268	16.206	.63803
M18 X 1.5	17.026	.67031	17.216	.67780	16.994	.66906	16.854	.66354
M18 X 1	17.350	.68307	17.510	.68937	17.324	.68205	17.206	.67740
M20 X 2.5	18.376	.72346	18.600	.73228	18.334	.72181	18.164	.71512
M20 X 1.5	19.026	.74906	19.216	.75654	18.994	.74780	18.854	.74228
M20 X 1	19.350	.76181	19.510	.76811	19.324	.76079	19.206	.75614
M22 X 2.5	20.376	.80220	20.600	.81102	20.334	.80055	20.164	.79386
M22 X 1.5	21.026	.82780	21.216	.83528	20.994	.82654	20.854	.82102
M24 X 3	22.051	.86815	22.316	.87858	22.003	.86626	21.803	.85839
M24 X 2	22.701	.89374	22.925	.90256	22.663	.89224	22.493	.88555
M25 X 1.5	24.026	.94591	24.226	.95378	23.994	.94465	23.844	.93874
M27 X 3	25.051	.98626	25.316	.99669	25.003	.98437	24.803	.97650
M27 X 2	25.701	1.01185	25.925	1.02067	25.663	1.01035	25.493	1.00366
M30 X 3.5	27.727	1.09161	28.007	1.10264	27.674	1.08953	27.462	1.08118
M30 X 2	28.701	1.12996	28.925	1.13878	28.663	1.12846	28.493	1.12177
M30 X 1.5	29.026	1.14276	29.226	1.15063	28.994	1.14150	28.844	1.13559
M33 X 2	31.701	1.24807	31.925	1.25689	31.663	1.24657	31.493	1.23988
M36 X 4	33.402	1.31504	33.702	1.32685	33.342	1.31268	33.118	1.30386
M35 X 1.5	34.026	1.33961	34.226	1.34748	33.994	1.33835	33.844	1.33244
M36 X 3	34.051	1.34059	34.316	1.35102	34.003	1.33870	33.803	1.33083
M39 X 2	37.701	1.48429	37.925	1.49311	37.663	1.48280	37.493	1.47610

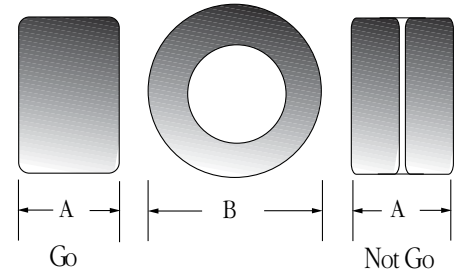
# Cylindrical Ring Gages/Master Setting Rings

**HEMCO**

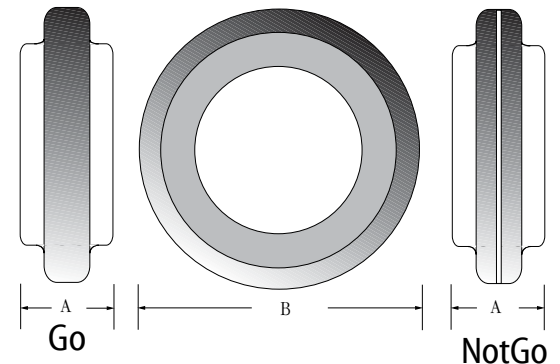
- ❑ HemcoChrome Process
- ❑ All gages are made to ASME Std B47.1 and in accordance with ASME B89 .1.6
- ❑ Master-Bilateral:  $\pm 1/2$  tolerance. Go: - (minus) tolerance, NotGo: + (plus) tolerance
- ❑ Unconditionally guaranteed against chipping
- ❑ NotGo rings are identified by a groove around the outside diameter.



Plain Cylindrical Ring Gages						
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	273.30	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.

How to order Cylindrical Ring Gages						
Plain Cylindrical Rings	Qty	Exact Diameter	Select One			Special Options
			Condition	Tolerance	Certifications	
			Go/Max/Minus Tol NotGo/Min/Plus Tol Master/Bilateral Tol	"XX" "X" "Y" "Z" "ZZ"	Long Form ISO 17025	
Example	1	2.875"	Go	XX	Long Form	Radius
				Note 4	Note 5	Note 6

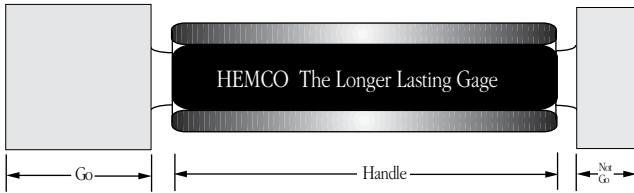
**Notes:**

1. Quantity Required.
2. Go, NotGo or Master Ring.
3. Exact Diameter of Member
4. Gage makers tolerance: XX, X, Y, Z, ZZ.
5. Standard Long Form or ISO 17025 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.

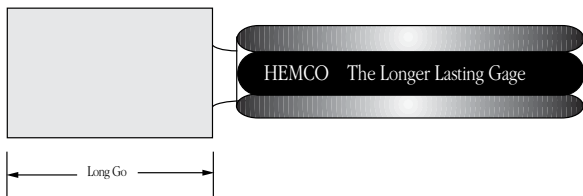
# Taperlock Cylindrical Plug Gages

HEMCO

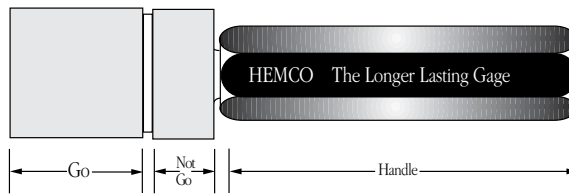
- ❑ HemcoChrome Process
- ❑ All gages are made to ASME B47.1 and B89.1.5
- ❑ Gages normally furnished to the Unilateral tolerance system: Go + Plus tolerance. NotGo - Minus tolerance.
- ❑ Gage members under .150 have male centers.
- ❑ Gage members over .150 have female centers.



Double End Go & NotGo



Long Go



Progressive

Plain Cylindrical Taperlock Plug Gages									
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	5.84	13/32	9/32	13/16	0	2	5/16
.230	.365	5.84	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

## How to order Taperlock Plain Cylindrical Plug Gages

Plain Cylindrical Taperlock Plugs	Qty	Exact Diameter (s)	Select One				Special Options
			Condition	Condition	Tolerance	Certifications	
			Single End. Double End. Long Go. Progressive	Go or Notgo	"XX" "X" "Y" "Z" "ZZ"	Long Form ISO 17025	Special Length. Marking Inst. Special Colored Handles. Depth Notches.
Example	1	2.875"	Go		XX	Long Form	Radius
					Note 4	Note 5	Note 6

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 4 for explanation of HEMCO Standard Long form & ISO 17025 Certifications.

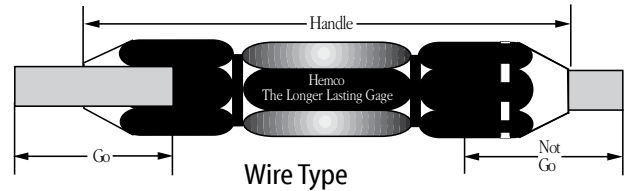
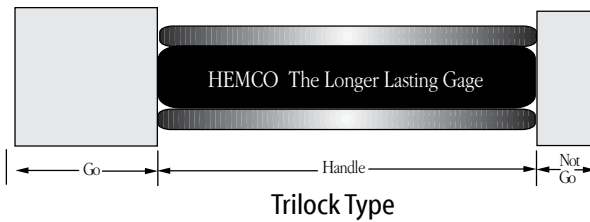


# Reversible Cylindrical Plug Gages

**HEMCO**



- ❑ HemcoChrome Process
- ❑ All Gages are made to ASME 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.



Plain Cylindrical Reversible Plug Gages									
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	1.010	19.30	25.65	Wire Type	2	2	8W	2-1/2	1-1/4
.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 Hdl.		

How to order Reversible Plain Cylindrical Plug Gages								
Plain Cylindrical Reversible Plugs	Qty	Exact Diameter (s)	Select One					Special Options
			Style	Condition	Condition	Tolerance	Certifications	
			Wire Reversible Trilock	Single End. Double End. Long Go. Progressive	Go or Notgo	"XX" "X" "Y" "Z" "ZZ"	Long Form ISO 17025	Special Length. Marking Inst. Special Colored Handles. Depth Notches.
Example	1	2..875"	Trilock	Single End	Go	XX	Long Form	Radius
						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 4 for explanation of HEMCO Standard Long Form & ISO 17025 Certifications.



**HEMCO**

**Standard Inch**

Sizes .005" through 1.0005" in .0001" increments (available from stock)

May be purchased individually

Complete gage sets and libraries

Also available in Class "X" or "XX" Go (+) or Notgo (-) in sizes .005" through 1.00009" in .0001 Increments

**Metric**

Sizes .13 mm through 25.55 mm (available from stock)

.01 mm increments

May be purchased individually

Complete gage sets and libraries

Also available in Class "X" or Class "XX" Go (+) or Notgo (-)



*The most complete plug gage line made in the United States*

To download a complete Ekonogage product catalog go to our website: <http://www.hemcogages.com>

**Master Setting Discs**

HemcoChrome Process

- ❑ All gages conform to ASME B47.1
- ❑ Styles 1 and 3 are normally furnished with a bilateral tolerance:  $\pm 1/2$  tolerance.
- ❑ Style 2 normally furnished to the unilateral tolerance system: Go:- (minus) tolerance, NotGo: + (plus) 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



Style 1



Style 2



Style 3

Master Discs						
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. HEMCO Standard Long Form or ISO 17025 Certification if required.
6. When Gage is special, please include all necessary information such as: Marking Instructions, Certifications, etc.

<u>Designations</u>	<u>Thread Series</u>	<u>ANSI/ASME Reference</u>
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 .....	SAE AS71051
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
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 .....	ISO 1501
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 (2)	B1.15
UNJC	Unified inch screw thread, coarse-pitch series, with rounded root of radius 0.15011P to 0.18042P (2)	B1.15
UNJF	Unified inch screw thread, fine-pitch series, with rounded root of radius 0.15011P to 0.18042P (2) ....	B1.15
UNJEF	Unified inch screw thread, extra-fine pitch series, with rounded root of radius 0.15011P to 0.18042P (2)	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) See also SAE AS8879, and ISO 3161.	