

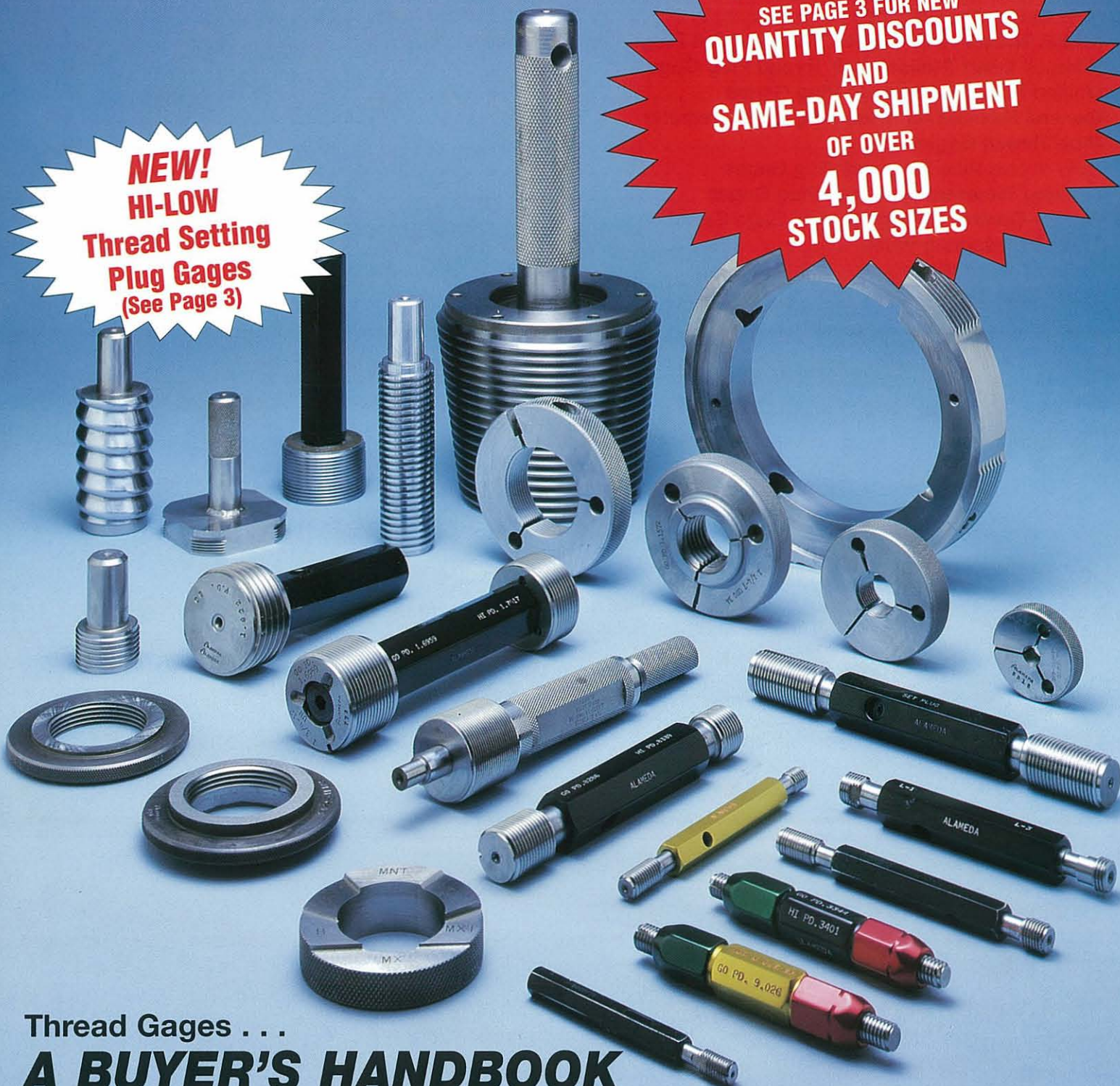
"Manufacturer of Quality Thread Gages since 1942."

# ALAMEDA

ALAMEDA IS A DIVISION OF DELTRONIC CORPORATION

SEE PAGE 3 FOR NEW  
QUANTITY DISCOUNTS  
AND  
SAME-DAY SHIPMENT  
OF OVER  
**4,000**  
STOCK SIZES

**NEW!**  
HI-LOW  
Thread Setting  
Plug Gages  
(See Page 3)



Thread Gages . . .

## **A BUYER'S HANDBOOK**

of Prices, Specifications, How-to-Use and How-to-Order Information

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## SPECIAL THREAD PLUG GAGES IN STOCK FOR SAME-DAY SHIPMENT

*The following is an example of our in-depth inventory of "specials" thread gages. We are continuously expanding our range of sizes. Call your local stocking Alameda distributor for "specials" sizes available, or call us directly here at the factory. The special gages you need are more than likely in stock for same-day shipment.*

12 PITCH TO: 4"	32 PITCH TO: 1 ¼"
16 PITCH TO: 4"	36 PITCH TO: ⅜"
18 PITCH TO: 2 ½"	40 PITCH TO: ⅜"
20 PITCH TO: 4"	56 PITCH TO: ¼"
27 PITCH TO: 1"	80 PITCH TO: #10 (.190")
28 PITCH TO: 1 ½"	

***Left Hand Threads to 4"***

## SPECIFICATIONS

### **CERTIFICATION**

Guaranteeing accuracy and traceability to the National Institute of Standards and Technology is included with all Alameda Thread Plug Gages.

The actual Calibrated Pitch Diameter is also supplied with each gage **at no extra charge**.

### **TOLERANCE**

Conforms to ANSI/ASME Screw Thread Standards for Class X gages in every respect. 'W' Tolerance available upon request.

# ORDERING INFORMATION

## SAME-DAY SHIPMENT

ALAMEDA stocks thousands of standard and special thread gage sizes for instant availability. This inventory is constantly monitored and adjusted by our computer to insure availability.

**1 (888) 424-3748**

**Fax: (800) 831-5990**

or call your local stocking distributor

### F.O.B.

Shipping Point (UPS standard shipping)

Specify: size, pitch, class, style, GO, NOT GO, or Double End, pitch diameter(s) and handle  
(i.e. 1/4 - 20, 2B, Rev with handle)

### HANDLES

Please specify exact marking when required. If one member only and a handle are ordered for one size thread, please advise if a s.e. (single end) or d.e. (double end) handle is needed. Size, class and tool number are marked at no charge.

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**

pages 4 - 10

All products on pages 4-10 that show this red symbol may be combined together for a quantity discount.

### QUANTITY DISCOUNT ASSORTED SIZES

7-13	.....	LESS 2%
14-24	.....	LESS 4%
25-49	.....	LESS 6%
50-Up	.....	LESS 10%

*Quantity discount applies to one order, shipped to one destination.*

# MADE TO ORDER HI-LOW Thread Setting Plug Gages

Each GO/NOT GO "HI-LOW" Thread Plug has two diameters, to check low limit and high limit of ring gage tolerances in one step.



Need to keep your production line going? Can't wait for outside Thread Ring Gage Calibration? The HI-LOW Setting Plug is the fastest way to check that a Ring Gage is still within Calibration. It saves an average of 25 minutes with each usage - pays for itself in 3 or 4 uses. Normally when the Production Department returns a Ring to the Gage Crib, the Inspector must break the seal and re-set the Ring - a job requiring special skills and twenty-five minutes. With the HI-LOW Setting Plug

the Ring is threaded onto the HI-LOW and if the Ring will pass over the front section and *not* pass over the back section then the Ring is still within tolerance and may be returned to the line - all within a few minutes. When the Ring Gage does need to be reset the use of the HI-LOW Setting Plug further replaces the uncertain and subjective "feel" of the inspector - (referred to as "significant drag" by the Federal Standard H-28) - by redesigning the inspection to more of a Go/No Go test.

**Delivery ONE WEEK - Quotations Upon Request**

# THREAD PLUG GAGES

- AGD Reversible & Taperlock styles
- Unified Thread Series (UNC-UNF-UNEF)
- Standard (ANSI B1.2) 'X' Tolerance, Class 2B or 3B

**QUANTITY DISCOUNTS ON ASSORTED SIZES**  
see page 3 for details

## TOLERANCE

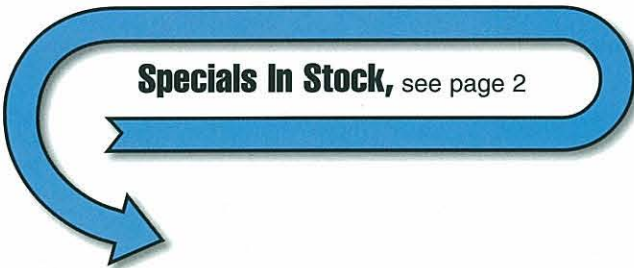
Conforms to ANSI/ASME Screw Thread Standards for Class X gages in every respect.



**REVERSIBLE**



**TAPERLOCK**



**Specials In Stock**, see page 2

FIGURES SHOWN IN GREEN ARE UN OR UNS, IN RED ARE UNEF (EXTRA FINE) SIZES

REVERSIBLE DESIGN			THREADS PER INCH				TAPERLOCK DESIGN		
HANDLE ONLY	STEEL		UNEF THREADS IN RED				STEEL		HANDLE ONLY
	GO or NOT GO 2B-3B		SIZE		UNC	UNF	GO or NOT GO 2B-3B		
	DE GAGE	MEMBER	DECIMAL	FRACTION			MEMBER	DE GAGE	
7.50	81.50	37.00	.060	#0	-	80	32.40	71.80	7.00
7.50	81.50	37.00	.073	#1	64	72	32.40	71.80	7.00
7.50	81.50	37.00	.086	#2	56	64	32.40	71.80	7.00
7.50	77.10	34.80	.099	#3	48	56	29.80	66.60	7.00
7.50	77.10	34.80	.112	#4	40	48	29.80	66.60	7.00
7.50	69.90	31.20	.125	#5	40	44	27.20	61.40	7.00
7.50	69.90	31.20	.138	#6	32	40	27.20	61.40	7.00
7.50	69.90	31.20	.164	#8	32	36	27.20	61.40	7.00
8.50	70.90	31.20	.190	#10	24	32	27.20	61.40	7.00
8.50	70.90	31.20	.216	#12	24	28	27.20	61.40	7.00
8.50	117.70	54.60	.216	#12	32	-	46.20	99.40	7.00
8.50	66.10	28.80	.250	¼	20	28	22.40	51.80	7.00
8.50	111.30	51.40	.250	¼	32	-	44.00	95.00	7.00
9.00	66.20	28.60	.3125	⅜	18	24	22.40	51.80	7.00
9.00	111.00	51.00	.3125	⅜	32	-	44.00	95.00	7.00
9.00	68.60	29.80	.375	⅜	16	24	23.80	54.60	7.00
9.00	117.80	54.40	.375	⅜	32	-	50.80	108.60	7.00
10.25	69.85	29.80	.4375	⅜	14	20	23.80	54.60	7.00
10.25	118.65	54.20	.4375	⅜	28	-	50.80	108.60	7.00
10.25	74.25	32.00	.500	½	13	20	25.20	57.40	7.00
10.25	128.65	59.20	.500	½	28	-	50.80	108.60	7.00
10.25	84.65	37.20	.5625	⅝	12	18	32.00	71.00	7.00
10.25	141.05	65.40	.5625	⅝	24	-	54.80	116.60	7.00
12.00	84.40	36.20	.625	⅝	11	18	32.00	71.00	7.00
12.00	141.20	64.60	.625	⅝	24	-	54.80	116.60	7.00
13.50	141.10	63.80	.6875	⅞	24	-	56.20	119.40	7.00
13.50	93.90	40.20	.750	¾	10	16	36.00	79.00	7.00
13.50	147.90	67.20	.750	¾	20	-	56.20	119.40	7.00
<b>BABY TRILOCK</b>									
10.00	157.20	73.60	.8125	⅞	20	-	62.80	132.60	7.00
10.00	107.20	48.60	.875	⅞	9	14	40.40	88.80	8.00
10.00	166.00	78.00	.875	⅞	20	-	64.40	136.80	8.00
10.00	196.00	93.00	.9375	⅞	20	-	65.60	139.20	8.00
10.00	123.60	56.80	1.000	1	8	12, 14	48.40	104.80	8.00
10.00	172.00	81.00	1.000	1	20	-	71.40	150.80	8.00
10.00	174.40	82.20	1.0625	1 ⅛	18	12	71.40	150.80	8.00
10.00	142.40	66.20	1.125	1 ¼	7	12	58.80	125.60	8.00
10.00	-	-	1.125	1 ¼	18	-	71.60	151.20	8.00
10.00	-	-	1.1875	1 ⅜	18	12	76.40	160.80	8.00
10.00	-	-	1.250	1 ½	7	12	67.80	143.60	8.00
10.00	-	-	1.250	1 ½	18	-	77.80	163.60	8.00
10.00	-	-	1.3125	1 ⅝	18	12	83.60	175.20	8.00
10.00	-	-	1.375	1 ⅝	6	12	76.80	161.60	8.00
10.00	-	-	1.375	1 ⅝	18	-	86.20	180.40	8.00
10.00	-	-	1.4375	1 ⅝	18	12	90.60	189.20	8.00
10.00	-	-	1.500	1 ½	6	12	83.80	175.60	8.00
10.00	-	-	1.500	1 ½	18	-	93.40	194.80	8.00

# THREAD RING GAGES TRUNCATED SETTING PLUGS

AGD style Taperlock Set Plugs are class 'W' tolerance on lead, flank, angles, straightness and 'X' tolerance on pitch diameter. 'W' Tolerance on pitch diameter available upon request.

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**

**Specials In Stock**, see page 2



**SETTING PLUGS**



**RING GAGES**

FIGURES SHOWN IN GREEN ARE UN OR UNS, IN RED ARE UNEF (EXTRA FINE) SIZES

TRUNCATED SETTING PLUGS				THREADS PER INCH				AGD THREAD RING GAGES		
HANDLE ONLY	COMPLETE DE GAGE	NOT GO	GO MEMBER	UNEF THREADS IN RED				GO MEMBER	NOT GO	HANDLE ONLY
		CLASS	CLASS	SIZE		UNC	UNF	CLASS	CLASS	
		2A-3A	1A-2A-3A	DECIMAL	FRACTION			1A-2A-3A	2A-3A	
7.00	128.60	60.80	60.80	.060	#0	-	80	97.20	97.20	9.00
7.00	128.60	60.80	60.80	.073	#1	64	72	88.00	88.00	9.00
7.00	128.60	60.80	60.80	.086	#2	56	64	85.20	85.20	9.00
7.00	120.20	56.60	56.60	.099	#3	48	56	85.20	85.20	9.00
7.00	120.20	56.60	56.60	.112	#4	40	48	79.00	79.00	9.00
7.00	114.60	53.80	53.80	.125	#5	40	44	70.20	70.20	9.00
7.00	114.60	53.80	53.80	.138	#6	32	40	70.20	70.20	9.00
7.00	114.60	53.80	53.80	.164	#8	32	36	67.00	67.00	9.00
7.00	114.60	53.80	53.80	.190	#10	24	32	67.00	67.00	9.00
7.00	120.20	56.60	56.60	.216	#12	24	28	67.00	67.00	9.00
7.00	144.60	68.80	68.80	.216	#12	32	-	87.60	87.60	9.00
7.00	104.60	48.80	48.80	.250	1/4	20	28	65.20	65.20	11.00
7.00	149.00	71.00	71.00	.250	1/4	32	-	84.80	84.80	11.00
7.00	104.60	48.80	48.80	.3125	5/16	18	24	65.20	65.20	11.00
7.00	149.00	71.00	71.00	.3125	5/16	32	-	84.80	84.80	11.00
7.00	108.20	50.60	50.60	.375	3/8	16	24	70.20	70.20	13.00
7.00	168.60	80.80	80.80	.375	3/8	32	-	91.20	91.20	13.00
7.00	116.20	54.60	54.60	.4375	7/16	14	20	70.20	70.20	13.00
7.00	168.60	80.80	80.80	.4375	7/16	28	-	91.20	91.20	13.00
7.00	118.60	55.80	55.80	.5	1/2	13	20	74.20	74.20	13.00
7.00	187.00	90.00	90.00	.5	1/2	28	-	96.40	96.40	13.00
7.00	132.60	62.80	62.80	.5625	9/16	12	18	84.00	84.00	18.00
7.00	199.00	96.00	96.00	.5625	9/16	24	-	101.20	101.20	18.00
7.00	138.60	65.80	65.80	.625	5/8	11	18	84.00	84.00	18.00
7.00	201.40	97.20	97.20	.625	5/8	24	-	102.40	102.40	18.00
7.00	217.40	105.20	105.20	.6875	11/16	24	-	95.40	95.40	18.00
7.00	159.00	76.00	76.00	.75	3/4	10	16	105.40	105.40	18.00
7.00	213.00	103.00	103.00	.75	3/4	20	-	118.40	118.40	18.00
7.00	223.40	108.20	108.20	.8125	13/16	20	-	130.60	130.60	18.00
8.00	186.00	89.00	89.00	.875	7/8	9	14	112.40	112.40	22.00
8.00	228.00	110.00	110.00	.875	7/8	20	-	121.40	121.40	22.00
8.00	232.40	112.20	112.20	.9375	15/16	20	-	136.60	136.60	22.00
8.00	214.00	103.00	103.00	1.00	1	8	12, 14	139.40	139.40	22.00
8.00	248.40	120.20	120.20	1.00	1	20	-	147.60	147.60	22.00
8.00	246.80	119.40	119.40	1.0625	1 1/16	18	12	174.60	174.60	22.00
8.00	246.80	119.40	119.40	1.125	1 1/8	7	12	177.60	177.60	22.00
8.00	257.60	124.80	124.80	1.125	1 1/8	18	-	184.00	184.00	26.00
8.00	268.80	130.40	130.40	1.1875	1 3/16	18	12	184.00	184.00	26.00
8.00	268.80	130.40	130.40	1.25	1 1/4	7	12	184.00	184.00	26.00
8.00	301.20	146.60	146.60	1.25	1 1/4	18	-	193.00	193.00	26.00
8.00	306.80	149.40	149.40	1.3125	1 3/8	18	12	192.40	192.40	26.00
8.00	309.20	150.60	150.60	1.375	1 1/2	6	12	190.40	190.40	26.00
8.00	317.20	154.60	154.60	1.375	1 1/2	18	-	201.00	201.00	26.00
8.00	327.20	159.60	159.60	1.4375	1 5/8	18	12	201.00	201.00	26.00
8.00	329.20	160.60	160.60	1.5	1 1/2	6	12	204.40	204.40	26.00
8.00	339.60	165.80	165.80	1.5	1 1/2	18	-	213.60	213.60	26.00

# METRIC THREAD PLUG GAGES

6H Tolerance

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**  
see page 3 for details

Alameda manufactures metric gages to ANSI standard B1.16. They equal or exceed requirements of ISO-1502 in every respect.

Specials In Stock, see page 2



**REVERSIBLE**



**TAPERLOCK**

REVERSIBLE DESIGN			NOMINAL SIZE & PITCH			TAPERLOCK DESIGN		
HANDLE ONLY	STEEL		SIZE	COARSE	FINE	STEEL		HANDLE ONLY
	GO or NOT GO 6H					GO or NOT GO 6H		
	DE GAGE	MEMBER				MEMBER	DE GAGE	
7.50	96.30	44.40	M1.60	.35	-	41.80	90.60	7.00
7.50	96.30	44.40	M2.00	.4	-	41.80	90.60	7.00
7.50	96.30	44.40	M2.20	.45	-	41.80	90.60	7.00
7.50	96.30	44.40	M2.50	.45	-	38.20	83.40	7.00
7.50	89.90	41.20	M3.00	.5	-	38.20	83.40	7.00
7.50	79.50	36.00	M3.50	.6	-	33.40	73.80	7.00
7.50	79.50	36.00	M4.00	.7	-	33.40	73.80	7.00
7.50	81.50	37.00	M4.50	.75	-	34.60	76.20	7.00
8.50	80.50	36.00	M5.00	.8	-	33.40	73.80	7.00
8.50	67.30	29.40	M6.00	1.0	-	28.00	63.00	7.00
8.50	67.30	29.40	M7.00	1.0	-	29.20	65.40	7.00
9.00	68.60	29.80	M8.00	1.25	1.0	26.40	59.80	7.00
10.25	68.25	29.00	M10.00	1.5	1.25, 1.0	29.20	65.40	7.00
10.25	77.05	33.40	M12.00	1.75	1.25, 1.0	29.20	65.40	7.00
12.00	86.40	37.20	M14.00	2.0	1.5, 1.0	35.20	77.40	7.00
12.00	86.40	37.20	M16.00	2.0	1.5	35.20	77.40	7.00
13.50	99.50	43.00	M18.00	2.5	1.5	40.20	87.40	7.00
13.50	103.10	44.80	M20.00	2.5	1.5	43.80	94.60	7.00
			M22.00	2.5	1.5	43.80	95.60	8.00
			M24.00	3.0	2.0	51.20	110.40	8.00
			M27.00	3.0	2.0	68.20	144.40	8.00
			M30.00	3.5	2.0	82.40	172.80	8.00
			M33.00	3.5	2.0	82.40	172.80	8.00
			M36.00	4.0	3.0	94.60	197.20	8.00
			* M39.00	4.0	3.0	104.80	217.60	10.00

\* M39.00 is Baby Trilock

## "HOW TO USE" REVERSIBLES

The greatest wear on thread plug gages occurs on the ends of the members. It is therefore advisable to consider the use of a reversible gage which has two gaging ends on each member and may be reversed in the handle when one end is worn. The initial cost of this type of gage is greater than the initial cost of a taperlock gage, but the per piece gaging cost may be lower if a large number of parts are to be checked. There are some disadvantages to a reversible type gage that should be considered. The handles are somewhat more cumbersome than a taperlock handle and it is more difficult to secure the members against turning in the handle; the smaller sizes are marked with the pitch diameter and nominal size on the handle only; the Go and Not Go members are of the same length. For these reasons, extra care must be taken when using reversible gages.

## "HOW TO USE" TAPERLOCKS

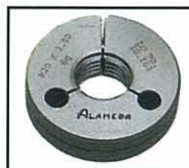
The most commonly used Go and Not Go thread plug gages are of taperlock design. They are easy to use and there is no possibility of using the wrong gage since each member is marked with the size and pitch diameter. They can also be identified by a visual check since the Go member is longer than the Not Go member.

# METRIC THREAD RING GAGES AND METRIC SET PLUG GAGES

Specials in Stock, see page 2



6g Tolerance



QUANTITY DISCOUNTS ON ASSORTED SIZES

see page 3 for details

## METRIC TRUNCATED SET PLUGS

## METRIC RING GAGES

METRIC SET PLUGS				PITCH			METRIC RING GAGES		
HANDLE ONLY	COMPLETE DE GAGE	NOT GO MEMBER	GO MEMBER	SIZE	COARSE	FINE	GO MEMBER	NOT GO MEMBER	RING HOLDER ONLY
		CLASS 6g	CLASS 6g				CLASS 6g	CLASS 6g	
7.00	159.80	76.40	76.40	M1.60	.35	-	126.60	126.60	9.00
7.00	155.00	74.00	74.00	M2.00	.40	-	116.40	116.40	9.00
7.00	155.00	74.00	74.00	M2.20	.45	-	117.60	117.60	9.00
7.00	155.00	74.00	74.00	M2.50	.45	-	104.60	104.60	9.00
7.00	150.60	71.80	71.80	M3.00	.50	-	91.00	91.00	9.00
7.00	150.60	71.80	71.80	M3.50	.60	-	92.20	92.20	9.00
7.00	145.80	69.40	69.40	M4.00	.70	-	84.40	84.40	9.00
7.00	147.80	70.40	70.40	M4.50	.75	-	84.40	84.40	9.00
7.00	145.80	69.40	69.40	M5.00	.80	-	84.40	84.40	9.00
7.00	122.20	57.60	57.60	M6.00	1.0	-	78.60	78.60	11.00
7.00	124.20	58.60	58.60	M7.00	1.0	-	78.60	78.60	11.00
7.00	124.20	58.60	58.60	M8.00	1.25	1.0	78.60	78.60	11.00
7.00	131.40	62.20	62.20	M10.00	1.5	1.25	84.40	84.40	13.00
7.00	141.00	67.00	67.00	M10.00	1.0	-	90.00	90.00	13.00
7.00	141.00	67.00	67.00	M12.00	1.75	1.25, 1.0	90.00	90.00	13.00
7.00	155.40	74.20	74.20	M14.00	2.0	1.5, 1.0	101.40	101.40	18.00
7.00	155.40	74.20	74.20	M16.00	2.0	1.5	100.20	100.20	18.00
7.00	186.20	89.60	89.60	M18.00	2.5	1.5	133.20	133.20	18.00
7.00	219.80	106.40	106.40	M20.00	2.5	1.5	155.00	155.00	18.00
8.00	230.40	111.20	111.20	M22.00	2.5	1.5	160.60	160.60	22.00
8.00	249.20	120.60	120.60	M24.00	3.0	2.0	194.60	194.60	22.00
8.00	273.20	132.60	132.60	M27.00	3.0	2.0	202.60	202.60	22.00
8.00	280.00	136.00	136.00	M30.00	3.5	2.0	207.20	207.20	22.00
8.00	335.20	163.60	163.60	M33.00	3.5	2.0	228.80	228.80	26.00
8.00	368.40	180.20	180.20	M36.00	4.0	3.0	254.80	254.80	26.00
10.00	408.00	200.00	200.00	* M39.00	4.0	3.0	280.40	280.40	26.00

\* M39.00 is Baby Trilock

### "HOW TO USE" THREAD SETTING PLUGS

The setting plug checks the pitch diameter of the ring and contacts the flanks of the thread to the maximum major diameter of the screw. The major beyond this is to be cleared in the ring. As a positive check on this, modern practice is to use the truncated type setting plug in which a portion of the major diameter has been reduced or truncated. In use, the thread ring gage is set to fit the pitch diameter on the truncated portion of the plug, then carefully screwed over the full form portion.

If the ring gage has proper clearance in the major diameter, there will be little or no difference in the feel of the ring as it passes from one section of the plug to the other.

### "HOW TO USE" THREAD RINGS

Go and Not Go thread ring gages are the application of the "virtual diameter or effective size gaging practice" to externally threaded parts. The Go thread ring gage simultaneously checks all the thread elements of form, lead and pitch diameter so that the cumulative effect of errors can be determined.

The Not Go thread ring gage checks one thread element only—the pitch diameter.

The minor diameter and the major diameter are cleared beyond those of the Go thread ring gage. Thus the Go thread ring gage in going on the part insures that the lead and form are correct, and the size is smaller than the maximum permitted pitch diameter of the part. The Not Go gage, in refusing to go on the part, insures that the size is larger than the minimum permitted pitch diameter.

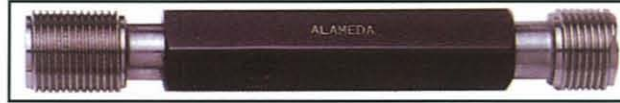
# WIRECOIL INSERT THREAD PLUG GAGES

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**  
see page 3 for details

## HELICAL COIL

Members are taperlock style, class 2B or 3B, either GO or NOT GO.

Specials In Stock, see page 2



**TAPERLOCK**

'X' TOLERANCE			MIL-T-21309E				'W' TOLERANCE		
HANDLE ONLY	CLASS 2B, 3B		SIZE		THREADS PER INCH		CLASS 2B, 3B		HANDLE ONLY
	STEEL				UNC	UNF	STEEL		
	GO or NOT GO		MEMBER	DE GAGE					
	DE GAGE	MEMBER			DECIMAL	FRACTION			
7.00	93.40	43.20	.086	#2	56	-	54.00	115.00	7.00
7.00	93.40	43.20	.099	#3	48	-	54.00	115.00	7.00
7.00	85.80	39.40	.112	#4	40	-	49.40	105.80	7.00
7.00	85.80	39.40	.125	#5	40	-	49.40	105.80	7.00
7.00	85.80	39.40	.138	#6	32	40	49.40	105.80	7.00
7.00	85.80	39.40	.164	#8	32	36	49.40	105.80	7.00
7.00	81.00	37.00	.190	#10	24	32	46.40	99.80	7.00
7.00	79.80	36.40	.216	#12	24	-	45.60	98.20	7.00
7.00	77.40	35.20	.250	1/4	20	28	44.00	95.00	7.00
7.00	77.40	35.20	.3125	5/16	18	24	44.00	95.00	7.00
7.00	79.80	36.40	.375	3/8	16	24	45.60	98.20	7.00
7.00	79.80	36.40	.4375	7/16	14	20	45.60	98.20	7.00
7.00	87.40	40.20	.500	1/2	13	20	50.40	107.80	7.00
7.00	94.20	43.60	.5625	9/16	12	18	54.60	116.20	7.00
7.00	94.20	43.60	.625	5/8	11	18	54.60	116.20	7.00
8.00	100.40	46.20	.750	3/4	10	16	57.80	123.60	8.00

Members are taperlock style, class 4H5H, either GO or NOT GO.  
Class 5H will be quoted upon request.

'X' TOLERANCE			METRIC			'W' TOLERANCE		
HANDLE ONLY	CLASS 4H5H		SIZE	PITCH		CLASS 4H5H		HANDLE ONLY
	STEEL			COARSE	FINE	STEEL		
	GO or NOT GO		MEMBER			DE GAGE		
	DE GAGE	MEMBER						
7.00	117.40	55.20	M2.20	.45	-	69.00	145.00	7.00
7.00	117.40	55.20	M2.50	.45	-	69.00	145.00	7.00
7.00	105.40	49.20	M3.00	.5	-	61.60	130.20	7.00
7.00	105.40	49.20	M3.50	.6	-	61.60	130.20	7.00
7.00	105.40	49.20	M4.00	.7	-	61.60	130.20	7.00
7.00	105.40	49.20	M5.00	.8	-	61.60	130.20	7.00
7.00	97.80	45.40	M6.00	1.0	-	56.80	120.60	7.00
7.00	97.80	45.40	M7.00	1.0	-	56.80	120.60	7.00
7.00	97.80	45.40	M8.00	1.25	1.0	56.80	120.60	7.00
7.00	90.60	41.80	M10.00	1.5	1.25	52.40	111.80	7.00
7.00	143.80	68.40	M10.00	1.0	-	85.60	178.20	7.00
7.00	109.80	51.40	M12.00	1.75	1.5	64.40	135.80	7.00
7.00	159.40	76.20	M12.00	1.25	-	95.40	197.80	7.00
7.00	125.80	59.40	M14.00	2.0	1.5	74.40	155.80	7.00
7.00	132.60	62.80	M16.00	2.0	1.5	78.60	164.20	7.00
7.00	158.20	75.60	M18.00	2.5	1.5	94.60	196.20	7.00



# UNIFIED NATIONAL MINIATURE PLUG GAGES

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**  
see page 3 for details

STRAIGHT SHANK WITH REVERSIBLE LENGTH					
HANDLE ONLY	GO or NOT GO	COMPLETE DE GAGE	SIZE		
			UNM	DIA	PITCH
7.50	224.60	456.70	.70	.0276"	145
7.50	198.60	404.70	.80	.0315"	127
7.50	185.80	379.10	.90	.0354"	113
7.50	177.00	361.50	1.00	.0394"	102
7.50	177.00	361.50	1.10	.0433"	102
7.50	162.80	333.10	1.20	.0472"	102
7.50	139.80	287.10	1.40	.0551"	85

## GENERAL FORMULA FOR PITCH DIAMETER MEASUREMENT OF SYMMETRICAL THREADS

The general formula for determining the pitch diameter of any thread whose sides are symmetrical with respect to a line drawn through the vertex and perpendicular to the axis of the thread, in which the slight effect of lead angle is taken into account, is:

$$(1) \quad E = M_w + \frac{\cot \alpha}{2n} - w [1 + (\operatorname{cosec}^2 \alpha + \cot^2 \alpha \tan^2 \lambda')]^{\frac{1}{2}}$$

IN WHICH	
E	Pitch diameter
$M_w$	Measurement over wires
$\alpha$	Half angle of thread
$n$	Number of threads per inch = $1/p$
$w$	Mean diameter of wires
$\lambda'$	Angle between axis or wire and plane perpendicular to axis of thread

This formula is a very close approximation, being based on certain assumptions regarding the positions of the points of contact between the wire and the thread.

**Formula 1** can be converted to the following simplified form, which is particularly useful when measuring threads of large lead angle:

$$(2) \quad E = M_w + \frac{\cot \alpha}{2n} - w (1 + \operatorname{cosec} \alpha')$$

IN WHICH	
$\alpha'$	The angle whose tangent = $\tan \alpha \cos \lambda'$

When **Formula 1** is used, the usual practice is to expand the square root term as a series, retaining only the first and second terms, which gives the following:

$$(3) \quad E = M_w + \frac{\cot \alpha}{2n} - w \left[ 1 + \operatorname{cosec} \alpha + \frac{\tan^2 \lambda' \cos \alpha \cot \alpha}{2} \right]$$

For large lead angles it is necessary to measure the wire angle,  $\lambda'$ , but for lead angles of 5° or less, if the "best size" wire is used, this angle may be assumed to be equal to the lead angle of the thread at the pitch line,  $\lambda$ . The value of  $\tan \lambda$ , the tangent of the lead angle, is given by the formula:

$$\tan \lambda = \frac{l}{3.1416E} = \frac{1}{3.1416NE}$$

IN WHICH	
$l$	Lead
$N$	Number of turns per inch
$E$	Nominal pitch diameter, or an approximation of the measured pitch diameter

# PIPE THREAD GAGES

**QUANTITY DISCOUNTS  
ON ASSORTED SIZES**  
see page 3 for details



**PIPE THREAD RING GAGES**  
NPTF, ANPT & NPT



**PIPE THREAD PLUG GAGES**  
NPTF, ANPT & NPT

Three-step gages show the permissible tolerance for the maximum, basic and minimum pitch diameter and these are available upon request.

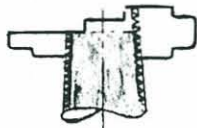
NPTF-ANPT PIPE THREAD PLUG GAGES							NPTF-ANPT PIPE RING GAGES		
HANDLE ONLY	NPTF	ANPT	NPTF	SIZE		THREADS PER INCH	L-1	L-2	PLAIN
	ANPT	ANPT	NPTF	DECIMAL	FRACTION		-	-	6 STEP
	PLAIN	L-1 OR L-3					RING	RING	RING
	6 STEP PLUG	3 STEP	1 STEP						
7.00	118.60	76.00	76.00	.0625	1/16	27	108.20	151.00	186.00
7.00	118.60	53.80	53.80	.125	1/8	27	74.60	146.00	186.00
7.00	118.60	63.60	63.60	.25	1/4	18	90.00	151.00	186.00
7.00	118.60	76.00	76.00	.375	3/8	18	95.00	160.40	186.00
8.00	118.60	87.00	87.00	.50	1/2	14	106.20	166.40	186.00
8.00	126.00	96.00	96.00	.75	3/4	14	121.40	183.60	209.00
8.00	136.40	106.20	106.20	1.00	1	11 1/2	137.80	200.00	209.00
8.00	144.80	112.20	112.20	1.25	1 1/4	11 1/2	146.00	216.40	209.00
8.00	158.40	128.40	128.40	1.50	1 1/2	11 1/2	176.40	257.80	245.80
8.00	220.40	152.60	152.60	2.00	2	11 1/2	249.00	299.00	299.40
12.00	338.60	241.40	241.40	2.50	2 1/2	8	270.40	357.00	357.00
12.00	366.80	272.60	272.60	3.00	3	8	329.40	422.40	414.80

NPT PIPE THREAD PLUG GAGES							NPT PIPE RING GAGES	
HANDLE ONLY	NPT		SIZE		THREADS PER INCH	NPT	Our pipe gages are manufactured to the following specifications:  NPT ANSI/ASME B1.20.1 NPTF ANSI B1.20.5 ANPT MIL-P-7105	
	S.E. PLUG	PLUG	DECIMAL	FRACTION		RING		
	W/ HANDLE	MEMBER						
7.00	67.00	60.00	.0625	1/16	27	104.20		
7.00	47.80	40.80	.125	1/8	27	72.80		
7.00	55.20	48.20	.25	1/4	18	79.00		
7.00	61.60	54.20	.375	3/8	18	92.80		
8.00	69.00	61.00	.50	1/2	14	104.20		
8.00	78.80	70.80	.75	3/4	14	116.60		
8.00	86.20	78.20	1.00	1	11 1/2	133.20		
8.00	94.80	86.80	1.25	1 1/4	11 1/2	146.60		
8.00	106.40	98.40	1.50	1 1/2	11 1/2	207.80		
8.00	127.80	119.80	2.00	2	11 1/2	207.80		
12.00	156.40	144.40	2.50	2 1/2	8	244.20		
12.00	181.00	169.00	3.00	3	8	305.60		
12.00	259.60	247.60	3.50	3 1/2	8	424.40		
12.00	285.80	273.80	4.00	4	8	485.40		
12.00	397.40	385.40	5.00	5	8	586.40		
12.00	470.20	458.20	6.00	6	8	691.80		

# PIPE RING & PLUG GAGES

## NPTF (DRYSEAL) 3 AND 6 STEP GAGES

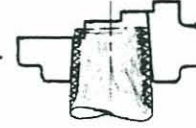
### RINGS



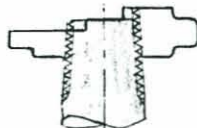
If the L<sub>1</sub> ring goes on to the maximum notch



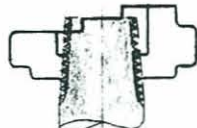
the L<sub>2</sub> ring must also go on to the maximum notch within 1/2 turn



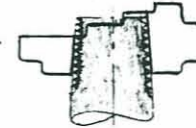
and the six step plain ring must go between the MX and MXT notch



If the L<sub>1</sub> ring goes on to the basic notch



the L<sub>2</sub> ring must also go on to the basic notch within 1/2 turn



and the six step plain ring must go between the B and BT notch



If the L<sub>1</sub> ring goes on to the minimum notch



the L<sub>2</sub> ring must also go on to the minimum notch within 1/2 turn



and the six step plain ring must go between the MN and MNT notch

### PLUGS



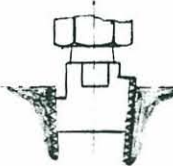
If the L<sub>1</sub> plug goes in to the maximum notch



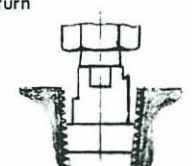
the L<sub>3</sub> plug must also go in to the maximum notch within 1/2 turn



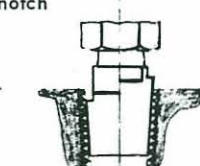
and the six step plain plug must go between the MX and MXT notch



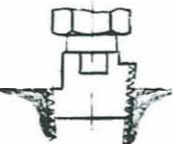
If the L<sub>1</sub> plug goes in to the basic notch



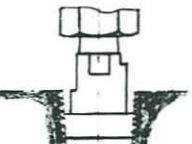
the L<sub>3</sub> plug must also go in to the basic notch within 1/2 turn



and the six step plain plug must go between the B and BT notch.



If the L<sub>1</sub> plug goes in to the minimum notch



the L<sub>3</sub> plug must also go in to the minimum notch within 1/2 turn



and the six step plain plug must go between the MN and MNT notch

# LIMITING DIMENSIONS THREAD PLUG GAGES

## UNIFIED STANDARD

THREAD WORK PLUG GAGES			NOM. SIZE	THREAD RING AND SETTING PLUGS			
GO BASIC	HI CLASS 2B	CLASS 3B		GO CLASS 2A	CLASS 3A	LO CLASS 2A	CLASS 3A
.0519	.0542	.0536	.060 (0) 80 UNF	.0514	.0519	.0496	.0506
.0629	.0655	.0648	.073 (1) 64 UNC	.0623	.0629	.0603	.0614
.0640	.0665	.0659	.073 (1) 72 UNF	.0634	.0640	.0615	.0626
.0744	.0772	.0765	.086 (2) 56 UNC	.0738	.0744	.0717	.0728
.0759	.0786	.0779	.086 (2) 64 UNF	.0753	.0759	.0733	.0744
.0855	.0885	.0877	.099 (3) 48 UNC	.0848	.0855	.0825	.0838
.0874	.0902	.0895	.099 (3) 56 UNF	.0867	.0874	.0845	.0858
.0958	.0991	.0982	.112 (4) 40 UNC	.0950	.0958	.0925	.0939
.0985	.1016	.1008	.112 (4) 48 UNF	.0978	.0985	.0954	.0967
.1088	.1121	.1113	.125 (5) 40 UNC	.1080	.1088	.1054	.1069
.1102	.1134	.1126	.125 (5) 44 UNF	.1095	.1102	.1070	.1038
.1177	.1214	.1204	.138 (6) 32 UNC	.1169	.1177	.1141	.1156
.1218	.1252	.1243	.138 (6) 40 UNF	.1210	.1218	.1184	.1198
.1437	.1475	.1465	.164 (8) 32 UNC	.1428	.1437	.1399	.1415
.1460	.1496	.1487	.164 (8) 36 UNF	.1452	.1460	.1424	.1439
.1629	.1672	.1661	.190 (10) 24 UNC	.1619	.1629	.1586	.1604
.1697	.1736	.1726	.190 (10) 32 UNF	.1688	.1697	.1658	.1674
.1889	.1933	.1922	.216 (12) 24 UNC	.1879	.1889	.1845	.1863
.1928	.1970	.1959	.216 (12) 28 UNF	.1918	.1928	.1886	.1904
.1957	.1998	.1988	.216 (12) 32 UNEF	.1948	.1957	.1917	.1933
.2175	.2224	.2211	.250 (1/4) 20 UNC	.2164	.2175	.2127	.2147
.2268	.2311	.2300	.250 (1/4) 28 UNF	.2258	.2268	.2225	.2243
.2297	.2339	.2328	.250 (1/4) 32 UNEF	.2287	.2297	.2255	.2273
.2764	.2817	.2803	.3125 (5/16) 18 UNC	.2752	.2764	.2712	.2734
.2854	.2902	.2890	.3125 (5/16) 24 UNF	.2843	.2854	.2806	.2827
.2922	.2964	.2953	.3125 (5/16) 32 UNEF	.2912	.2922	.2880	.2898
.3344	.3401	.3387	.375 (3/8) 16 UNC	.3331	.3344	.3287	.3311
.3479	.3528	.3516	.375 (3/8) 24 UNF	.3468	.3479	.3430	.3450
.3547	.3591	.3580	.375 (3/8) 32 UNEF	.3537	.3547	.3503	.3522
.3911	.3972	.3957	.4375 (7/16) 14 UNC	.3897	.3911	.3850	.3876
.4050	.4104	.4091	.4375 (7/16) 20 UNF	.4037	.4050	.3995	.4019
.4143	.4198	.4178	.4375 (7/16) 28 UNEF	.4132	.4143	.4096	.4116
.4500	.4565	.4548	.500 (1/2) 13 UNC	.4485	.4500	.4435	.4463
.4675	.4731	.4717	.500 (1/2) 20 UNF	.4662	.4675	.4619	.4643
.4768	.4816	.4804	.500 (1/2) 28 UNEF	.4757	.4768	.4720	.4740
.5084	.5152	.5135	.5625 (9/16) 12 UNC	.5068	.5084	.5016	.5045
.5264	.5323	.5308	.5625 (9/16) 18 UNEF	.5250	.5264	.5205	.5230
.5354	.5405	.5392	.5625 (9/16) 24 UNEF	.5342	.5354	.5303	.5325
.5660	.5732	.5714	.625 (5/8) 11 UNC	.5644	.5660	.5589	.5619
.5889	.5949	.5934	.625 (5/8) 18 UNF	.5875	.5889	.5828	.5854
.5979	.6031	.6018	.625 (5/8) 24 UNEF	.5967	.5979	.5927	.5949
.6604	.6656	.6643	.6875 (1 1/16) 24 UNEF	.6592	.6604	.6552	.6574
.6850	.6927	.6907	.750 (3/4) 10 UNC	.6832	.6850	.6773	.6806
.7094	.7159	.7143	.750 (3/4) 16 UNF	.7079	.7094	.7029	.7056
.7175	.7232	.7218	.750 (3/4) 20 UNEF	.7162	.7175	.7118	.7142
.7800	.7857	.7843	.8125 (13/16) 20 UNEF	.7787	.7800	.7743	.7767
.8028	.8110	.8089	.875 (7/8) 9 UNC	.8009	.8028	.7946	.7981
.8286	.8356	.8339	.875 (7/8) 14 UNF	.8270	.8286	.8216	.8245
.8425	.8482	.8468	.875 (7/8) 20 UNEF	.8412	.8425	.8368	.8392
.9050	.9109	.9094	.9375 (15/16) 20 UNEF	.9036	.9050	.8991	.9016
.9188	.9276	.9254	1.000 (1) 8 UNC	.9168	.9188	.9100	.9137
.9459	.9535	.9516	1.000 (1) 12 UNF	.9441	.9459	.9382	.9415
.9536	.9609	.9590	1.000 (1) 14 UNS	.9519	.9536	.9463	.9494
.9675	.9734	.9719	1.000 (1) 20 UNEF	.9661	.9675	.9616	.9641
1.0264	1.0326	1.0310	1.0625 (1 1/16) 18 UNEF	1.0250	1.0264	1.0203	1.0228
1.0322	1.0416	1.0393	1.125 (1 1/8) 7 UNC	1.0300	1.0322	1.0228	1.0268
1.0709	1.0787	1.0768	1.125 (1 1/8) 12 UNF	1.0691	1.0709	1.0631	1.0664
1.0889	1.0951	1.0935	1.125 (1 1/8) 18 UNEF	1.0875	1.0889	1.0828	1.0853
1.1514	1.1577	1.1561	1.1875 (13/16) 18 UNEF	1.1499	1.1514	1.1450	1.1478
1.1572	1.1668	1.1644	1.250 (1 1/4) 7 UNC	1.1550	1.1572	1.1476	1.1517
1.1959	1.2039	1.2019	1.250 (1 1/4) 12 UNF	1.1941	1.1959	1.1879	1.1913
1.2139	1.2202	1.2186	1.250 (1 1/4) 18 UNEF	1.2124	1.2139	1.2075	1.2103
1.2764	1.2827	1.2811	1.3125 (15/16) 18 UNEF	1.2749	1.2764	1.2700	1.2728
1.2667	1.2771	1.2745	1.375 (1 3/8) 6 UNC	1.2643	1.2667	1.2563	1.2607
1.3209	1.3291	1.3270	1.375 (1 3/8) 12 UNF	1.3190	1.3209	1.3127	1.3162
1.3389	1.3452	1.3436	1.375 (1 3/8) 18 UNEF	1.3374	1.3389	1.3325	1.3352
1.4014	1.4079	1.4062	1.4375 (17/16) 18 UNEF	1.3999	1.4014	1.3949	1.3977
1.3917	1.4022	1.3996	1.500 (1 1/2) 6 UNC	1.3893	1.3917	1.3812	1.3856
1.4459	1.4542	1.4522	1.500 (1 1/2) 12 UNF	1.4440	1.4459	1.4376	1.4411
1.4639	1.4704	1.4687	1.500 (1 1/2) 18 UNEF	1.4624	1.4639	1.4574	1.4602

# QUALITY CONTROL THROUGH PROPER GAGE SELECTION

## PRODUCTION INSPECTION OF THREADED PARTS

The inspection of threaded parts can be approached in two general ways. The individual elements that make up the complex form that is the thread, can each be measured and the results can be compared with a set of standards for these elements. The other method of inspection is to check the thread as a unit for interchangeability and function by use of Go and No Go fixed limit gages. The first method individually measures such variables as lead, uniformity of helix, flank angles, taper, roundness and surface finish, as well as the major diameter, minor diameter and pitch diameter. This method is rarely used in the routine inspection of production parts but is usually limited to the inspection of thread gage themselves, or an analysis of production parts that limit gages have shown to be faulty. This will be discussed in more detail in the section dealing with the measurement of thread gages.

The second method, which is known as the "virtual diameter or effective size gaging practice," provides the ability to check threaded parts accurately and quickly for function and also to provide a definite basis for acceptance or rejection. This is the method in general use by means of Go and No Go thread plug and ring gages. The Go, or maximum metal limit gage, makes certain that the parts may be assembled by controlling the maximum tightness or minimum looseness of the mating parts. This gage simultaneously checks as many elements of the thread as possible. The No Go, or minimum metal limit gage, represents the minimum limit of the external thread or the maximum limit of the internal thread. In order to secure workable knowledge from the gage, it is necessary to know which element is exceeding the specified tolerance. Therefore, a No Go gage checks the No Go limit of one element only. In the Unified and American National series this is usually the pitch diameter because it is this dimension that controls the quality of fit. Other thread series occasionally use more than one No Go gage, each to check a different dimension. Since the No Go gage is a minimum metal limit gage, all parts should be considered acceptable that either do not enter the gage, or upon entering, develop a definite metal to metal drag before the third turn of engagement. The gage should not be forced by applying greater torque than is necessary to obtain a drag fit.

The purpose of a gage is to control the quality of production. Wear and abrasion from parts being gaged will, in time, alter the size of the gage. Plug gages get smaller with wear, thus Go gages which were of "W" tolerance when new would soon wear until they were out of the permissible part tolerance limit. Wear on Go gages is much greater than on No Go gages since a Go gage has full engagement in each part checked. A worn No Go gage tends to restrict parts to the middle of the part tolerance but it will reject parts that are actually still within the product tolerance.

## THE GAGE FOR YOUR JOB

Since the cost of gaging is a definite cost of manufacture, certain practicalities must be recognized in regard to maximum metal limit and minimum metal limit gages. In the first place, absolute accuracy cannot be obtained commercially since the gage maker must have some tolerance. The smaller the tolerance, the more expensive the gage to manufacture. In the second place, absolute size is impossible to maintain since gages wear with use. Recognition of these facts leads to the necessity of making a proper selection of gages if gaging costs are to be kept to a minimum. The selection of the proper gage will be determined by consideration of the number of parts to be gaged; the materials from which these parts are made; the tolerance, design and material of the gages.

## TOLERANCE AS A FACTOR IN GAGE SELECTION

Theoretically the actual size of the gage should be the absolute maximum and absolute minimum size of the part tolerance. This would produce maximum acceptance of usable parts but the exclusive use of basic gages would be very expensive because of their short wear life. It is more practical to check the part as it is machined with working gages of "Y" tolerance or high limit "X"

tolerance. Inspection gages of either low limit "X" tolerance or "W" tolerance are used to check the acceptance or non-acceptance of the part. In a "Y" tolerance gage, the actual size of the gage is moved toward the middle of the product limit. This, together with the gage manufacturer's tolerance, gives about fifteen percent of the part tolerance as gage wear life. In normal operation some parts would be in this low fifteen percent and therefore rejected by a "Y" tolerance or high limit "X" tolerance gage, even though the parts were within the product tolerance limit. Absolute limit, or "W" tolerance gages, which have very little wear life since they are on basic size, can be used to re-inspect the parts rejected by these gages. By this combined use of gages of various tolerances, it is possible to obtain maximum gage wear life and hence low unit gaging costs; while at the same time having the maximum acceptance of usable parts. No Go gages are not made in "Y" tolerance although in some situations a special plus tolerance No Go gage is used. Since this gage is outside the product part tolerance, marginal parts must be re-inspected with a high limit "X" or "W" tolerance gage in order to eliminate oversize parts.

## MEASUREMENT OF THREAD WORK PLUG GAGES AND THREAD SETTING PLUGS

The measurement of thread plug gages can best be accomplished by the individual examination of the elements making up the gage. The elements of major diameter, pitch diameter and minor diameter, as well as the thread flank angle and the lead—both linear and helical—all affect the function of the gage; therefore, each element must conform to closely held standards. Errors or variation in the thread flank angles and the lead also affect the measurement of the pitch diameter. Hence they must be closely held to prevent a false pitch diameter reading.

## O.D. AND P.D. MEASUREMENT

The measurement of the major diameter does not present a great problem since it can be measured directly. It usually has liberal limits since its function is to check a cleared diameter in the thread to be measured.

The measurement of the pitch diameter, on the other hand, presents certain difficulties which may result in uncertainty as to the true P.D. measurement. The "three wire" method is the most satisfactory and accurate method when properly used. In this method, small hardened steel cylinders or wires of the correct size are placed in the thread groove—two on one side of the gage and one on the opposite side. The contact face of the anvil over the two wires must be sufficiently large to touch both wires. The size wire that touches exactly at the midslope of a thread of given pitch is termed the "best size" wire for that pitch. For 60° threads the best size wire is equal to  $.57735 \times P$ . In order to measure the P.D. of a thread gage to an accuracy of 0.0001, the wires used must be accurate to 0.00002.

In addition to using "best size" wires of known accuracy in measuring P.D., it is also necessary to limit the contact load to avoid deformation of the wires and the gage. For 60° threads, one pound pressure should be used for pitches finer than twenty and two and a half pounds pressure for threads of twenty pitch or coarser. Measurement of thread plug gages using recommended pressures and wires should be accurate to 0.0001.

There are also some common shop practices which will result in inaccurate P.D. measurements. One is the all too common practice of holding wires down into the thread by means of elastic bands. This prevents the wires from adjusting themselves to the proper position in the thread grooves and will give a false measurement. Another often used but poor method of measuring is to support the gage on two wires laid on a horizontal surface and taking a measurement from this surface to the top of the third wire which is placed in a thread on the top of the gage. If the gage is of large diameter, the weight of the gage will cause distortion of the bottom wires and thus give an inaccurate reading. Both of these practices should be avoided.

# THREAD MEASURING WIRES

## CONFORM TO THREAD WIRE STANDARDS

Deltronic Thread Wires are certified to meet or exceed requirements of the ANSI/ASME B89.1.17, B1.2, B1.16, B1.5, B1.8 thread standard as well as Federal Spec. GGG-W-366b and meet anticipated ISO Standard as well.

### TOLERANCE

Commonality, three wires within each set are within 5 millionths (.000,005"), .00031mm of calibrated size; Set Diameter is within 20 millionths (.000,020"), .0005mm of "best" wire size and calibrated to the nearest 10 millionths (.000,010"), .00025mm of the exact size: Roundness is within 10 millionths (.000,010"), .00025mm; Surface Finish is better than 2 microinches AA, lapped; Hardness, Rc 62-64 stabilized; Straightness of the central 1/2 inch of the wire's length is within 10 millionths (.000,010"), .00025mm maximum deviation.

Thread wires are manufactured by our parent company **DELTRONIC CORP.**

ALL PRICES FOB SANTA ANA, CA

### INCH AND METRIC



### WIRE SET PACKAGING

Each set of 3 wires is contained in a screw-top vial. The vial is packaged in a hinged-lid box which is labeled to show pitch and Calibrated Wire Size. The Calibrated Wire Size is also shown on the Certification of Accuracy contained in each set box.

### ACME AND BUTTRESS WIRES

Best Wire Sizes are in stock for 29" Acme and 7°/45° Buttress Thread Checking. Certification and tolerances match those of Deltronic's standard 60° thread wires.

These three wire sets are packaged in the vials within labeled boxes the same as all other Deltronic thread and gear wires.

#### BUTTRESS WIRES

3-wire sets are twice the price of ACME.

#### ACME WIRES

PITCH	DIAMETER	3-WIRE SETS	
			PRICE/SET
1	.51645"		75.60
1 1/3	.38734"		75.60
1 1/2	.34430"		75.60
1 3/4	.29511"		75.60
2	.25823"		75.60
2 1/2	.20658"		75.60
3	.17215"		75.60
3 1/2	.14756"		60.40
4	.12911"		60.40
4 1/2	.11477"		60.40
5	.10329"		60.40
5 1/2	.09390"		60.40
6	.08608"		60.40
7	.07378"		60.40
8	.06456"		60.40
9	.05738"		60.40
10	.05164"		60.40
11	.04695"		60.40
12	.04304"		60.40
14	.03689"		60.40
16	.03228"		60.40
18	.02869"		60.40
20	.02582"		60.40

TW23L ACME THREAD WIRE LIBRARY ..... \$1,496.40

Contains 23, 3-Wire Sets (1-20 listed above)

Packaged in a wood Carry Case.



#### METRIC THREAD-WIRE LIBRARY

TW28M-L ..... \$1,481.80

Contains 28, 3 Wire-Sets (.35mm-10.0mm, see standard sizes listed at left) packaged in a FREE wooden Gage-Carry Case.

#### MASTER LIBRARIES

All Thread Wire Libraries are available as "Master Libraries" (i.e., used to calibrate "working" wire sets by simple comparison techniques). Master Libraries include only one wire per pitch, calibrated to the sixth (one millionth) decimal place and including traceability — NIST test number. Master Thread Wire Libraries include Gage-Carry Cases.

### THREAD WIRE 3-WIRE SETS

When ordering, specify "threads per inch"

THREADS PER INCH	NOMINAL DIAMETER	LENGTH	PRICE/SET
120	.00481	1 7/8"	65.60
100	.00577	1 7/8"	65.60
96	.00601	1 7/8"	65.60
90	.00642	1 7/8"	65.60
80	.00722	1 7/8"	65.60
72	.00802	1 7/8"	65.60
64	.00902	1 7/8"	65.60
56	.01031	1 7/8"	65.60
50	.01155	1 7/8"	65.60
48	.01203	1 7/8"	40.40
44	.01312	1 7/8"	40.40
40	.01443	1 7/8"	40.40
36	.01604	1 7/8"	40.40
32	.01804	1 7/8"	40.40
30	.01925	1 7/8"	40.40
28	.02062	1 7/8"	40.40
27	.02138	1 7/8"	40.40
26	.02221	1 7/8"	40.40
24	.02406	1 7/8"	40.40
22	.02624	2 1/4"	40.40
20	.02887	2 1/4"	40.40
18	.03208	2 1/4"	40.40
16	.03608	2 1/4"	40.40
14	.04124	2 1/4"	40.40
13	.04441	2 1/4"	40.40
12	.04811	2 1/4"	40.40
11 1/2	.05020	2 1/4"	40.40
11	.05249	2 1/4"	40.40
10	.05774	2 1/4"	40.40
9	.06415	2 1/4"	40.40
8	.07217	2 1/4"	40.40
7 1/2	.07698	2 1/4"	40.40
7	.08248	2 1/4"	40.40
6	.09623	2 1/4"	40.40
5 1/2	.10497	2 1/4"	65.60
5	.11547	2 1/2"	65.60
4 1/2	.12830	2 1/2"	65.60
4	.14434	2 1/2"	65.60
3 1/2	.16496	2 1/2"	65.60
3 1/4	.17765	2 1/2"	65.60
3	.19245	2 1/2"	65.60
2 1/2	.20955	2 1/2"	65.60
2 1/4	.23094	2 1/2"	65.60
2	.28868	2 1/2"	65.60

TW20-L LIBRARY ..... \$806.40

Contains 20, 3-wire sets (sets 6 - 36 listed above, except 7 1/2 and 11 1/2 threads per inch) packaged in a Gage-Carry Case.

TW34-L LIBRARY ..... \$1,597.60

Contains 34, 3-wire sets (sets 4 - 80 listed above, except 7 1/2 and 11 1/2 threads per inch) packaged in a Gage-Carry Case.

Prices and specifications are subject to change without notice.

### METRIC THREAD WIRE SIZES

PITCH (MM) (ORDER BY PITCH)	BEST WIRE SIZE		PRICE (PER SET)
	MM	INCH EQUIVALENT	
.20	.1155	.00455	65.60
.225	.1299	.00511	65.60
.25	.1443	.00568	65.60
.30	.1732	.00682	65.60
.35	.2021	.00796	65.60
.40	.2309	.00909	65.60
.45	.2598	.01023	65.60
.50	.2887	.01137	65.60
.55	.3175	.01250	65.60
.60	.3464	.01364	65.60
.70	.4041	.01591	65.60
.75	.4330	.01705	40.40
.80	.4619	.01818	40.40
.85	.4907	.01932	40.40
.90	.5196	.02046	40.40
1.00	.5774	.02273	40.40
1.25	.7217	.02841	40.40
1.50	.8660	.03410	40.40
1.75	1.0104	.03978	40.40
2.00	1.1547	.04546	40.40
2.50	1.4434	.05683	40.40
3.00	1.7321	.06819	40.40
3.50	2.0207	.07956	40.40
4.00	2.3094	.09092	40.40
4.50	2.5981	.10229	40.40
5.00	2.8868	.11365	65.00
5.50	3.1754	.12502	65.00
6.00	3.4641	.13638	65.00
7.00	4.0415	.15911	65.00
8.00	4.6188	.18184	65.00
9.00	5.1962	.20457	65.00
10.00	5.7735	.22730	65.00

### LIBRARIES

Deltronic Thread Wire Libraries assure in-plant availability of "best size" wires the moment you need them. These new Libraries encourage use of the correct three wire method for determining pitch diameter for close tolerance threaded parts and for certification of thread plug gages quickly. Organized in a FREE wooden Gage-Carry Case, Libraries are easily and safely transported. (See illustration and listing above)

# TAPER SINE BLOCKS

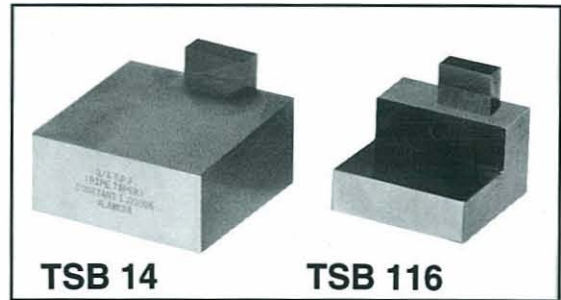
## SPECIFICATIONS — PRICING — USE INFORMATION

Alameda Gage has introduced a Taper Sine Block which reduces the tapered measurement of tapered pipe gages to a straight line measurement. Pitch Diameters can now be checked by the three wire method commonly used in the measurement of parallel thread gages. The pitch diameter is measured over the best wires for each size gage and the major diameter at the small end of the gage is measured directly on the block. Any error in the required  $\frac{3}{4}$ " per foot taper is

shown as a deviation from the straight line measurement.

These sets of sine blocks are intended for use in either a vertical or horizontal amplifier with a large fixed platen (see photo).

Alameda Taper Sine Blocks for measuring pipe thread plug gages in a vertical position. Two Taper Sine Blocks are required to cover the range of sizes from  $\frac{1}{16}$ " to  $\frac{3}{8}$ ". The second size checks  $\frac{1}{4}$ " to 3".



**TSB 14**

**TSB 116**

### PRICES

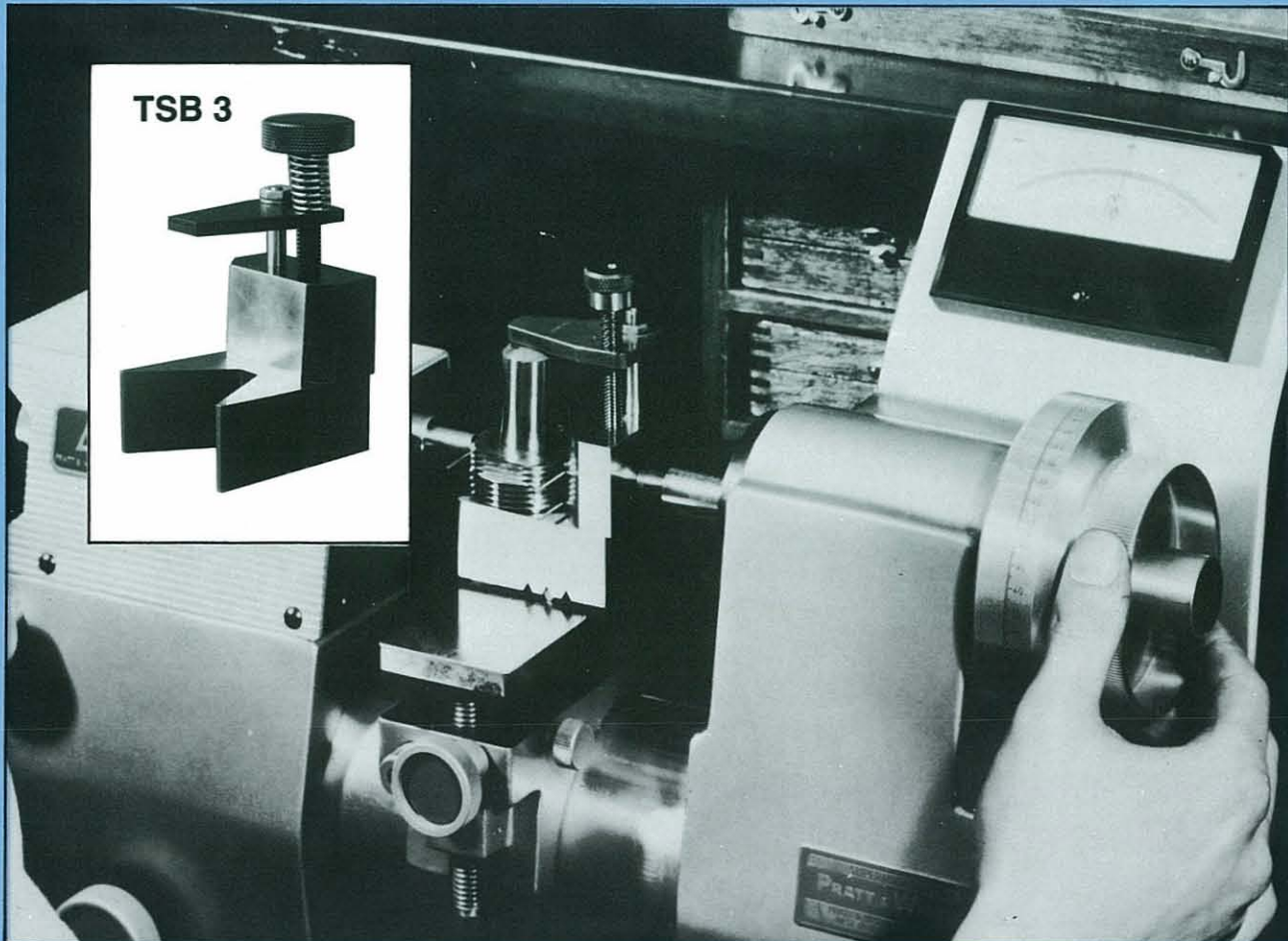
**MODEL TSB 116** ..... \$520.00 each  
Range  $\frac{1}{16}$ " to  $\frac{3}{8}$ "

**MODEL TSB 14** ..... \$520.00 each  
Range  $\frac{1}{4}$ " to 3"

**BOTH BLOCKS: Set Price** ..... \$1,040.00

Alameda Taper Sine Block for measuring pipe thread plug gages in a horizontal measuring machine. One block covers the size from  $\frac{1}{16}$ " to 3".

**MODEL TSB 3** ..... \$950.00  
Range  $\frac{1}{16}$ " to 3"



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ALAMEDA IS A DIVISION OF DELTRONIC CORPORATION

*Alameda manufacturers a complete spectrum of thread gages  
from micro-miniatures thru 4" diameter.*

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THREAD RING GAGES

TRUNCATED SETTING PLUGS

WIRECOIL GAGES

METRIC RING GAGES

SPECIAL THREAD GAGES

THREAD RING — 6g

“J” RINGS TO 1.5”

THREAD PLUGS — 6H

HI-LOW SETTING PLUGS

THREAD WIRES

MINIATURE SCREW THREADS

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*NPT, ANPT, NPTF, NPS, NPSM, NPSL, BSP, BSPT*

*ALSO NPSF, NPSC*

## SPECIALS

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**NEW! HI-LOW SETTING PLUGS - SEE PAGE 3**

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