LUFKIN

PRECISION TOOLS

STANDARD OF ACCURACY

THE LUFKIN RULE CO.
SAGINAW, MICH., U.S.A.
PRECISION TOOL DIVISION
CATALOG No. 7

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STANDARD OF ACCURACY

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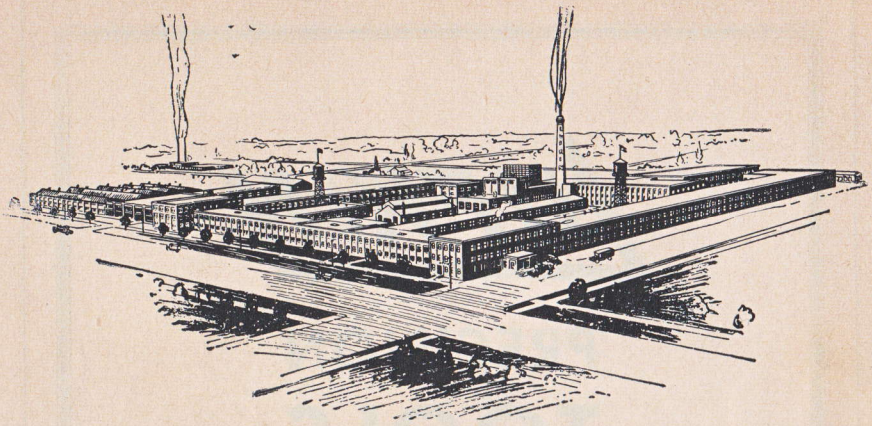
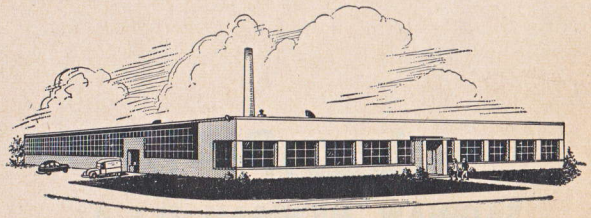
THE LUFKIN RULE CO.
SAGINAW, MICHIGAN, U. S. A.
NEW YORK: 132-138 Lafayette St.
THE LUFKIN RULE CO. OF CANADA, LTD.
BARRIE, ONT.



PLANT OF

THE LUFKIN RULE CO.

SAGINAW, MICHIGAN, U.S.A.



PLANT OF

THE LUFKIN RULE CO. OF CANADA, LTD.

BARRIE, ONT.

Introduction

This is our Precision Tool Catalog.

PRECISION TOOLS are the product of a separate division of our plant, in which we bring to the choice of materials and to the designing, manufacturing and inspecting of each tool that specialized knowledge and care which insure its superior quality.

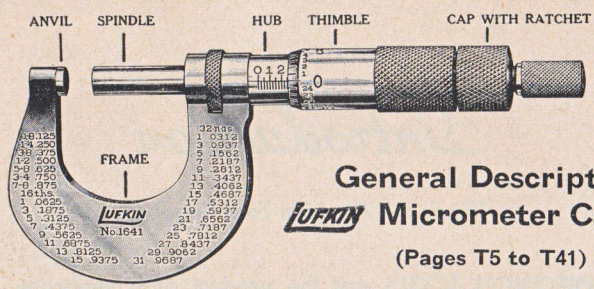
Our Precision Tool Division is, however, a unit under the same general management as the manufacture of our Measuring Tapes, etc. In building and marketing these Tools we are not only maintaining but extending the high reputation which our Measuring Tapes and Rules have borne for many years.

Lufkin Tools are well designed and finished, but, more important, they have a number of improved and exclusive features that are a really great aid to mechanics.

Thus this Line has firmly won the favor of fine mechanics and established itself high among the leaders of its kind.

Our General Catalog No. 12C covers not only these Precision Tools but Measuring Tapes, Spring Joint, Boxwood and other Folding Rules, Miscellaneous Wood Rules, etc. It is gladly sent on request to the trade and to mechanics and others interested in our General Line.

THE LUFKIN RULE CO.



General Description
LUFKIN Micrometer Calipers

(Pages T5 to T41)

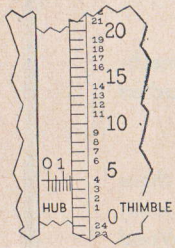
Valuable Features of These Micrometers

Chrome Clad Non-Glare Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered) Reading Line Always Retains Its Original Position.
Even After Adjusting for Wear, Thimble Does Not Cover Measurement Lines on Hub.
Simplicity of Construction. Ease of Adjustments

AS TO PATTERN, WE OFFER THREE TYPES OF MICROMETERS:

(1) Full Finished Frame.
(2) Enameled, Medium Weight, Ribbed Frame.
(3) Enameled, Heavy, Ribbed Frame.

Directions for Reading LUFKIN Micrometer Calipers



READING TO .154

To Read a Measurement to One Thousandth of an Inch:

Read first the total of thousandths indicated by the lines on the hub (each of those lines represents 25) as .025, .050, .075, .100, .125, etc. To this add the intermediate thousandths, reading these directly off the thimble, where each one, 1 to 24, is numbered. Example, (per Cut to the left):

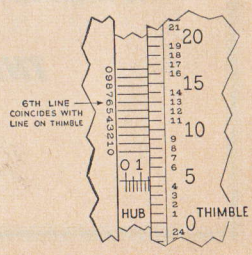
Hub reading total is	150
Thimble reading is	4
Total Measurement is	.154 inch

To Read a Measurement to One Ten-Thousandth of an Inch:

Measurements to ten-thousandths inch are obtained by using vernier graduations (a series of divisions on the hub of our Micrometer). Per Cut to the right, the hub bears ten of these division lines occupying the same space as nine divisions on the thimble, and numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

To the reading on the hub add the reading on the thimble, as detailed above, this giving the total of full thousandths. To that add the reading of that line on the vernier which coincides with a line on the thimble. If that be the line numbered 4, it means .0004, i.e., 4/10,000ths inch.

Example: Cut to the right shows total measurement .1546 inch. This is the grand total of 150 thousandths indicated on hub, plus 4 thousandths indicated on sleeve, plus 6 ten-thousandths indicated on vernier.



READING TO .1546

Construction Features of Our Outside Micrometers

Three parts, the One-Piece Spindle, the Thimble and the Cap enter into the adjustment for wear on anvil and spindle faces. On the Spindle, the thread that engages the screw nut runs to its very end. The Thimble is screwed onto the Spindle. A chuck is formed on the end of the Thimble, and tightening the Cap locks Thimble to Spindle very firmly, resulting in a most secure setting. As the Cap does not touch the Spindle, it cannot change the setting.

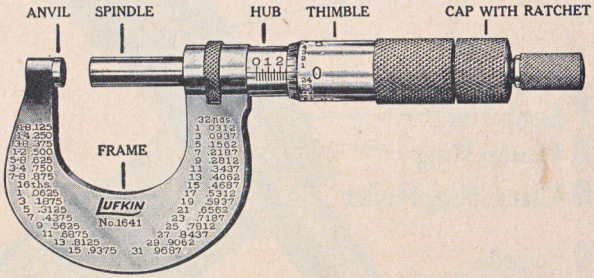
Our Micrometers Always Retain These Excellent Features:

The Reading Line permanently keeps its original position, directly in line of vision.

The thimble does not cover measurement lines on the hub, either after simply adjusting for wear or grinding and lapping of anvil and spindle faces, (made necessary by wear).

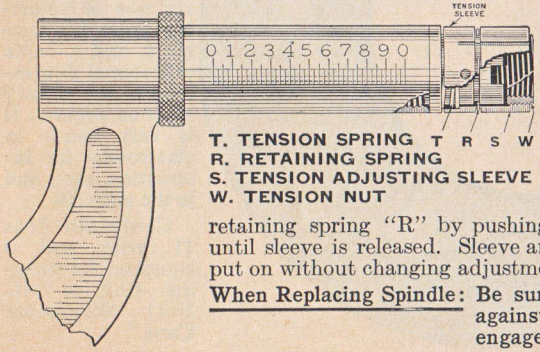
These Micrometers have Hardened and Ground Thread. Every mechanic will recognize the great value of this.

Directions for Adjusting LUFKIN Micrometers for Wear on Faces of Anvil and Spindle



Loosen Cap with wrench. Grip Spindle and give Thimble about ¼ turn counterclockwise. Then, by turning Thimble, bring Micrometer to the zero reading. By gripping Spindle, back it away from Anvil. Then test whether Micrometer is properly set. If so, grip Spindle and back it away from Anvil. Then grip Thimble only and tighten Cap with wrench.

Screw Tension of No. 1900 Series Micrometers:



On this Series no changing of screw tension is ordinarily necessary, as the tension spring automatically takes up wear.

For Cleaning: To remove tension adjusting sleeve "S" and tension spring "T," remove spindle, turn retaining spring "R" by pushing it with pin or thumb nail until sleeve is released. Sleeve and spring can be taken off and put on without changing adjustment.

When Replacing Spindle: Be sure tension nut is held firmly against end of hub until threads are engaged in frame.

Screw Tension of All Micrometers Other Than No. 1900 Series:

To change this tension: With the wrench, adjust nut on end of hub.

Skeleton View

LUFKIN

CHROME CLAD

Full Finished Micrometers

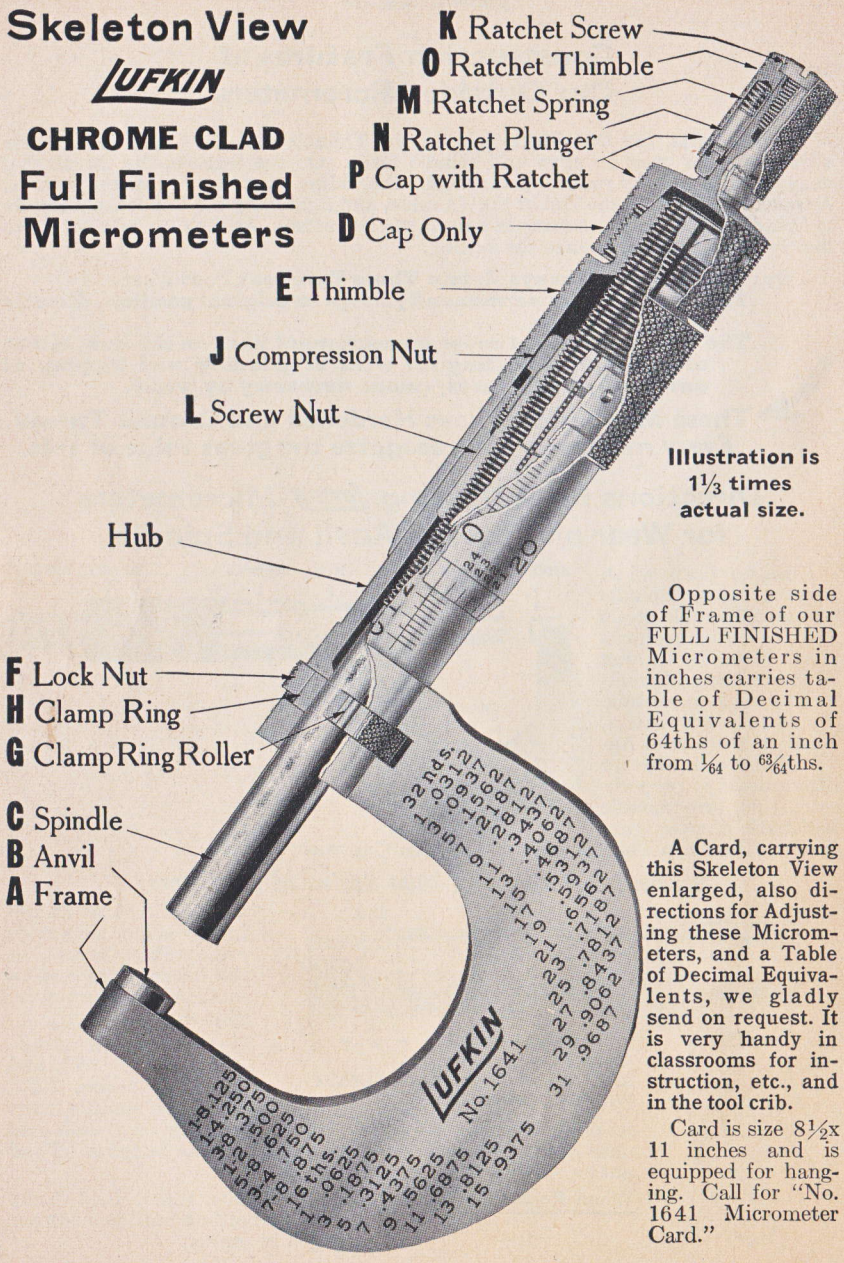


Illustration is 1⅓ times actual size.

Opposite side of Frame of our FULL FINISHED Micrometers in inches carries table of Decimal Equivalents of 64ths of an inch from 1/64 to 63/64ths.

A Card, carrying this Skeleton View enlarged, also directions for Adjusting these Micrometers, and a Table of Decimal Equivalents, we gladly send on request. It is very handy in classrooms for instruction, etc., and in the tool crib.

Card is size 8½x 11 inches and is equipped for hanging. Call for "No. 1641 Micrometer Card."

Skeleton View

Enameled

Heavy, Ribbed Frame Micrometers

SERIES No. 1900

Illustration is 1⅕ times actual size.

A Card, carrying this Skeleton View enlarged, also Directions for Adjusting these Micrometers, and a Table of Decimal Equivalents, we gladly send on request. It is very handy in classrooms for instruction, etc., and in the tool crib.

Card is size 8½x 11 inches and is equipped for hanging. Call for "No. 1941 Micrometer Card."

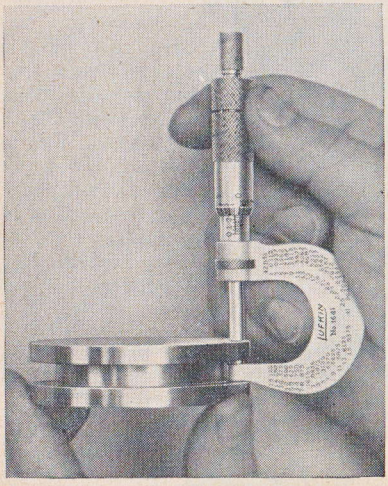
LUFKIN CHROME CLAD MICROMETERS

Easy to Read • Rust and Wear Resistant
One-Piece Spindle • Hardened Ground Thread
Micro-Lap Mirror-Like Finish on Anvil and Spindle Ends

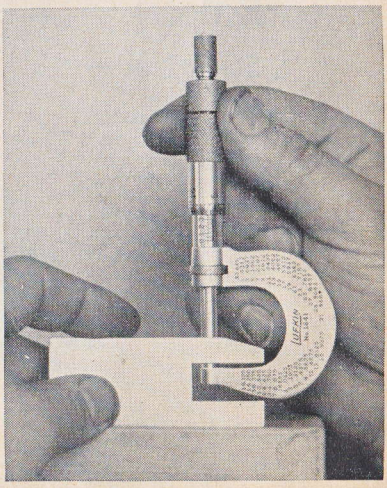
Lufkin Micrometers are supplied with a "Chrome Clad" Satin Finish. This finish possesses a non-glare quality which makes reading easier in bright or poor light. Markings stand out sharp and bold against the satin finish which is also highly rust and wear resistant.

To insure the highest degree of measuring accuracy the anvil and spindle ends have a Micro-Lap, Mirror-Like finish. The one-piece spindle has hardened and ground threads assuring smooth action and long life. Other features are the cut-away frame, making it easy to get into hard-to-get-at places; "rapid-reading" (each thousandth graduation on the thimble numbered) and ease of adjustment, a method by which reading lines always maintain their original position, directly in the line of vision. Chrome Clad Frames also carry decimal equivalents of 8ths, 16ths, 32nds and 64ths prominently marked for easier reading.

Form of Cut-Away on anvil end of Frame of our Full Finished Micrometers makes possible entry in minimum clearance and measuring to maximum depth in narrow slots and openings. Frame retains rigidity.



VIEW "A"

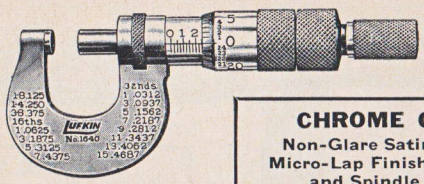


VIEW "B"

FULL FINISHED MICROMETERS

Will Measure in the Small Clearances and to the Depths Indicated Below.

Micrometer Size	VIEW "A" Clearance of	VIEW "A" Permits Measuring To Depth	VIEW "B" Clearance of	VIEW "B" Permits Measuring To Depth
1-Inch Micrometer	5/16 inch	9/32 inch	17/32 inch	15/16 inch
2-Inch Micrometer	5/16 inch	9/32 inch	19/32 inch	1 1/8 inch
1/2-Inch Micrometer	1/4 inch	15/64 inch	13/32 inch	5/8 inch



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends

Half-Inch Micrometer Calipers

(Patented)

Full Finished, Cut Away Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

These Micrometers have the Improved Shape Cut Away Frame, i.e. narrower anvil end. Hence they will measure in places inaccessible to many others, as detailed on opposite page.

For Measuring by Thousandths of an Inch.

Number			Each
1610	Plain	Range: 0 to ½ inch.	$10.50
1620	With Lock Nut	Range: 0 to ½ inch.	11.75
1630	With Ratchet Stop	Range: 0 to ½ inch.	11.25
1640	With Lock Nut and Ratchet Stop	Range: 0 to ½ inch.	12.50

For Measuring by Ten-Thousandths.

1610V	Plain	Range: 0 to ½ inch.	$13.00
1620V	With Lock Nut	Range: 0 to ½ inch.	14.25
1630V	With Ratchet Stop	Range: 0 to ½ inch.	13.75
1640V	With Lock Nut and Ratchet Stop	Range: 0 to ½ inch.	15.00

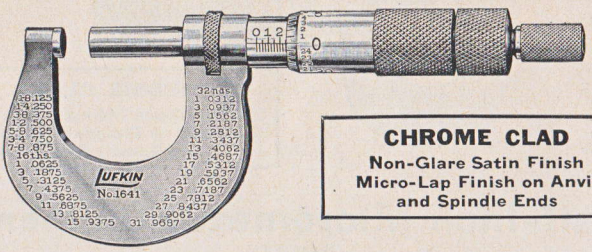
Metric Micrometer Calipers. 13 MM.

Full Finished, Cut Away Frame.
(As described above)
Hardened Ground Thread. One-Piece Spindle.

For Measuring by Hundredths of a Millimeter.

Number			Each
1610M	Plain	Range: 0 to 13 mm.	$10.50
1620M	With Lock Nut	Range: 0 to 13 mm.	11.75
1630M	With Ratchet Stop	Range: 0 to 13 mm.	11.25
1640M	With Lock Nut and Ratchet Stop	Range: 0 to 13 mm.	12.50

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends

One-Inch Micrometer Calipers

(Patented)

Full Finished, Cut Away Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered)

A most valuable feature of these Micrometers is their Improved Shape Cut Away Frame. The anvil end being narrower, measurements can be taken in places inaccessible to many other Micrometers. For illustration of use, see page T8.

These Micrometers will enter a $\frac{5}{16}$ inch slot to measure to a depth of $\frac{9}{32}$ inch, and will measure in a $\frac{17}{32}$ inch slot to a depth as great as $\frac{15}{16}$ inch.

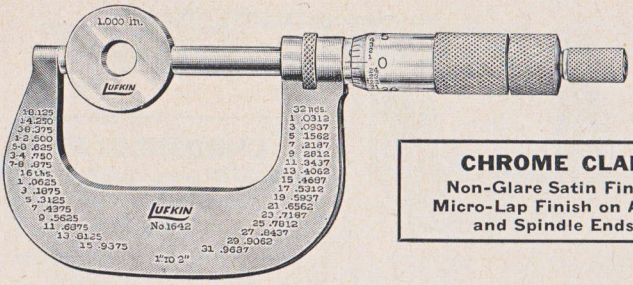
Number	For Measuring by Thousandths of an Inch.		Each
1611	Plain	Range: 0 to 1 inch.	$12.75
1621	With Lock Nut	Range: 0 to 1 inch.	14.00
1631	With Ratchet Stop	Range: 0 to 1 inch.	13.50
1641	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	14.75
	For Measuring by Ten-Thousandths.		
1611V	Plain	Range: 0 to 1 inch.	$15.25
1621V	With Lock Nut	Range: 0 to 1 inch.	16.50
1631V	With Ratchet Stop	Range: 0 to 1 inch.	16.00
1641V	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	17.25

Metric Micrometer Calipers. 25 MM.

Full Finished, Cut Away Frame.
(As described above)
Hardened Ground Thread. One-Piece Spindle.

Number	For Measuring by Hundredths of a Millimeter.		Each
1611M	Plain	Range: 0 to 25 mm.	$12.75
1621M	With Lock Nut	Range: 0 to 25 mm.	14.00
1631M	With Ratchet Stop	Range: 0 to 25 mm.	13.50
1641M	With Lock Nut and Ratchet Stop	Range: 0 to 25 mm.	14.75

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil and Spindle Ends

Two-Inch Micrometer Calipers

(Patented)

Full Finished, Cut Away Frame. Hardened Ground Thread. One-Piece Spindle. Rapid Reading (each thousandth numbered)

These Micrometers have the Improved Shape Cut Away Frame, making the anvil end narrower. Hence they will measure in places inaccessible to many others.

They have the same initial entering clearance as our 1-inch Micrometer, pictured on page 180, i.e., will enter a $\frac{5}{16}$ inch slot to measure to a depth of $\frac{9}{32}$ inch. They will measure in a $\frac{19}{32}$ inch slot to a depth as great as $1\frac{1}{8}$ inch.

Number	For Measuring by Thousandths of an Inch.		Each
1612	Plain	Range: 1 to 2 inches.	$14.25
1622	With Lock Nut	Range: 1 to 2 inches.	15.50
1632	With Ratchet Stop	Range: 1 to 2 inches.	15.00
1642	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	16.25
	For Measuring by Ten-thousandths.		
1612V	Plain	Range: 1 to 2 inches.	$16.75
1622V	With Lock Nut	Range: 1 to 2 inches.	18.00
1632V	With Ratchet Stop	Range: 1 to 2 inches.	17.50
1642V	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	18.75

One-inch standard supplied with all above Micrometers.

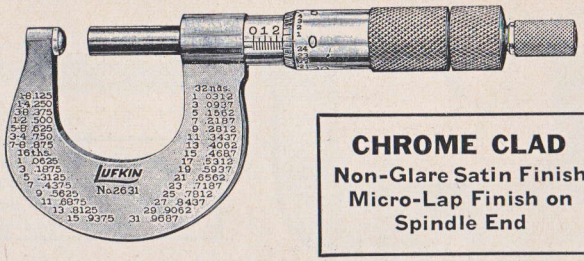
Metric Micrometer Calipers. 50 MM.

Full Finished, Cut Away Frame.
(As described above.)
Hardened Ground Thread. One-Piece Spindle.

Number	For Measuring by Hundredths of a Millimeter.		Each
1612M	Plain	Range: 25 to 50 mm.	$14.25
1622M	With Lock Nut	Range: 25 to 50 mm.	15.50
1632M	With Ratchet Stop	Range: 25 to 50 mm.	15.00
1642M	With Lock Nut and Ratchet Stop	Range: 25 to 50 mm.	16.25

25 mm. standard supplied with all above Micrometers.

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Spindle End

One-Inch Tubing Micrometers

(Patented)

Two Types: Full Finished Frame. Enameled Frame.
All Frames Cut Away.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

For accurately measuring thickness of walls of tubing, etc. in range from zero to one inch. Micrometers 2611 and 2631 will enter to measure tubing down to 3/8 inch inside diameter, No. 2911 down to 5/8 inch.

The end of the spindle is flat, the end of the anvil is rounded so it touches at only one point on the inside of tube, thus giving exact thickness.

These one-inch Tubing Micrometers are offered in the two popular types of frame, the full finished carrying decimal equivalents and the enameled, heavy, ribbed type.

With Full Finished Frame.

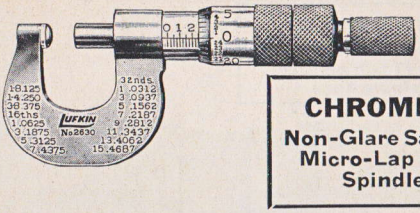
Number	For Measuring By Thousandths of an Inch.			Each
2611	Tubing Micrometer.	Plain.	Range: 0 to 1 inch.	$14.25
2631	Tubing Micrometer.	With Ratchet Stop.	Range: 0 to 1 inch.	15.00

With Enameled, Heavy, Ribbed Frame.

Number	For Measuring By Thousandths of an Inch.			Each
2911	Tubing Micrometer.	Plain.	Range: 0 to 1 inch.	$10.75

Packing: One in a box.

NOTE: Metric Tubing Micrometers—These in range 0 to 25 mm., can be supplied. Prices same as corresponding type 1-inch size.



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Spindle End.

Half-Inch Tubing Micrometers

(Patented)

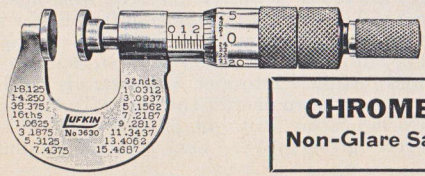
Full Finished, Cut Away Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered)

For micrometer measurement of thickness of walls of tubing, etc., from zero to one-half inch. Will enter to measure tubing down to 5/16 inch inside diameter.

Anvil contact face is rounded and spindle face is flat, so these touch at but one point on inside and outside of tube, thus giving exact thickness.

Number	For Measuring By Thousandths of an Inch.			Each
2610	Tubing Micrometer.	Plain.	Range: 0 to ½ inch.	$11.75
2630	Tubing Micrometer.	With Ratchet Stop.	Range: 0 to ½ inch.	12.50

NOTE: Metric Tubing Micrometers—In range 0 to 13 mm, prices same as above.



CHROME CLAD
Non-Glare Satin Finish

Paper Gage Micrometer Calipers

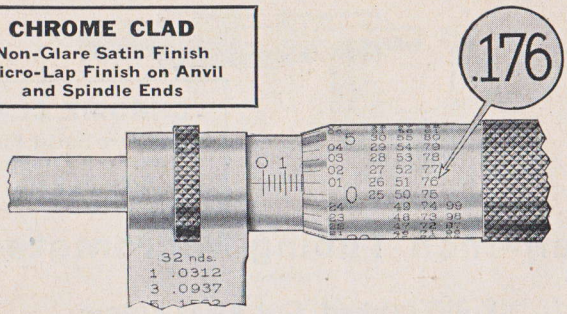
(Patented)

Full Finished, Cut Away Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered)

For micrometer measurement of thickness of paper, sheet rubber and other soft materials. Extra large anvil and spindle faces, 7/16 inch diameter, reduce compression.

Number	For Measuring By Thousandths of an Inch.			Each
3610	Paper Gage Micrometer.	Plain.	Range: 0 to ⅜ inch.	$14.00
3630	Paper Gage Micrometer.	With Ratchet Stop.	Range: 0 to ⅜ inch.	14.75
	For Measuring By Hundredths of a Millimeter.			
3610M	Paper Gage Micrometer.	Plain.	Range: 0 to 9 mm.	$14.00
3630M	Paper Gage Micrometer.	With Ratchet Stop.	Range: 0 to 9 mm.	14.75
	Extra for Finger Ring (Supplied when specified).....			1.50

CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends



Direct Indicating One-Inch Micrometer Calipers

(Patented)

Full Finished, Cut Away Frame. Hardened Ground Thread. One-Piece Spindle.

Many chances of error in reading measurements are eliminated by using these Lufkin "Direct Indicating" Micrometers, because no additions or other calculations are necessary, the total reading is determined at a glance. This is accomplished by the unique arrangement of the figures on the thimble. Another exclusive and valuable feature is the absence of complicated gears and counters.

Frames of these Micrometers have the improved Cut Away as illustrated page T8.

The hub markings are same as on regular type Micrometers: the hundreds of thousandths are indicated by long lines, numbered 0 to 9; the shorter, intermediate lines, which are in groups of three, indicate .025, .050 and .075 inch respectively. The sleeve is notched or cut away at the zero point so that at each revolution of the spindle a new line comes instantly into view when zero is reached. On the sleeve a row of figures from 0 to 24 is shown nearest the edge. To the right of that is a group of three rows of figures indicating 25 to 49, 50 to 74 and 75 to 99, so arranged in spiral form that each row carries into the next without jumping over.

Directions for Reading.

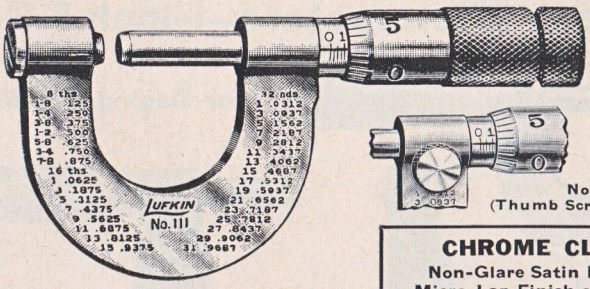
Note on the hub the last line in view. If it is a long line, read in edge column on sleeve. If it is the first short line, read in first row of figures in the group of three. If the second short line shows, read in second row of the group of three; if third line, read in third row. Prefix to this reading the figure indicating hundreds of thousandths. You then have the full reading without any calculation, no chance of errors in addition as by the old method.

On these "Direct Indicating" Micrometers it is as simple as on any others to read measurement by the old method, and the new user of them may wish to so verify his first readings. Practice will soon convince him that this "Direct Indicating" method of reading is practical and positive, saves time and avoids errors.

Micrometer **No. 1641V-DI** will read to one ten-thousandth part of an inch. With it, the thousandths are read as detailed above, the ten-thousandths by using the vernier graduations on the hub in the manner described page T4.

Number		Each
	For Measuring by Thousandths of an Inch.	
1641DI	With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.	$16.50
	For Measuring by Ten-thousandths.	
1641V-DI	With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.	19.00

Packing: One in a box.



No. 121
(Thumb Screw Lock Nut)

CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends

Millmens Micrometers—One-Inch

(Patented)

With Full Finished Frame.

Nos. 111 and 121
ARE THE IDEAL MILL MICROMETERS
Specially Designed and Built for
Rapid Gaging of Mill Sheets, etc.

Both Micrometers Listed Below Have These Features:

Hardened Ground Thread.
One-Piece Spindle.
Large, Heavy Face Figures and Prominent Graduations, easy to read.
Long Bevel on anvil and spindle, slide most readily onto the work.
Screw Nut which will not loosen from effects of heat.
Methods of Adjustment:

Anvil adjustment of these Micrometers is quick, simple and positive:
With screw driver remove screw at outer end of frame.
Turn spindle to zero.
With screw driver turn adjustment screw until anvil contacts spindle.
Micrometer is then in adjustment, with anvil securely set; end screw serving both as anvil lock screw and protecting cap.
Spindle adjustment, as in our standard Micrometers and as detailed on page T5, is also embodied in these Micrometers.

Number 121 has thumb screw lock nut, with round, knurled head.

For Measuring by Thousandths of an Inch.

Number		Each
111 Millmens Micrometer. Plain	Range: 0 to 1 inch.	$12.75
121 Millmens Micrometer. With Thumb Screw Lock Nut.	Range: 0 to 1 inch.	14.00

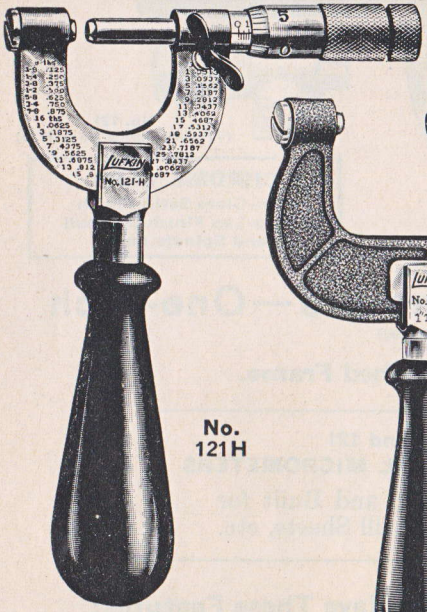
Packing: One in a box.

NOTE: Similar Micrometer With Wood Handle—See No. 121H, page T16.

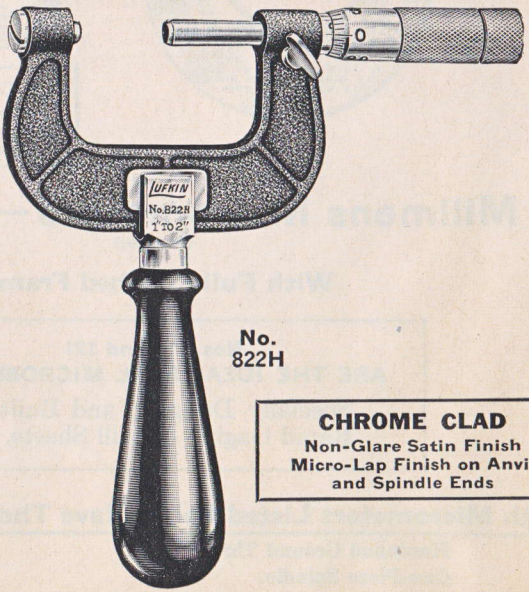
Millmens Micrometers—1-inch & 2-inch

(Patented)

For Gaging Hot Metal.



No. 121H



No. 822H

CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil and Spindle Ends

Both Micrometers Listed Below Have These Features:

Hardened Ground Thread.
One-Piece Spindle.
Wood Handle, giving secure and safe grip.
Wing Head Lock Nut, easiest to grasp and lock firmly, also release quickly, even with gloved hand.
Prominent Figures and Graduations.
Long Bevel on anvil and spindle.
Screw Nut which will not loosen from effects of heat.
Methods of Adjustment:

Anvil adjustment of these Micrometers is quick, simple and positive: With screw driver remove screw at outer end of frame. Turn spindle to zero. With screw driver turn adjustment screw until anvil contacts spindle. Micrometer is then in adjustment with anvil securely set; end screw serving both as anvil lock screw and protecting cap.

Spindle adjustment as in our standard Micrometers and as detailed on page T5 is also embodied in these Micrometers.

Number	**For Measuring by Thousandths of an Inch.**	Each
	Full Finished Frame. Range: 0 to 1 inch.	
121H	Millmens Micrometer. Wing Head Lock Nut.....	$18.00
	Enameled, Ribbed Frame. Range: 1 to 2 inch.	
822H	Millmens Micrometer. Wing Head Lock Nut	$17.50
	Extra for 1-inch Standard, (Supplied only when ordered).....Each	$1.50

CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends

Millmens Micrometers

(Patented)

Half-Inch and One-Inch

For Gaging Hot Metal.

Wood Handle. Wing Head Lock Nut.

With Extra Heavy, Ribbed Frame, Enameled.

Hardened Ground Thread.

One-Piece Spindle.

Both Micrometers Listed Below Have Also These Features:

Most rigid Frame, extra sturdy, specially built for hard service.
Wood Handle, giving secure grip, safely away from the hot metal.
Wing Head Lock Nut, easiest to grasp and lock firmly, also release quickly, even with gloved hand.
Prominent Figures and Graduations, easy to read quickly.
Throat Deeper than standard type Micrometers.
Large Diameter Spindle, (.270 inch).
Screw Nut which will not loosen from effects of heat.
Long Bevel on anvil and spindle, slide most readily onto the work.
Lufkin Standard method of Micrometer Adjustment.

For Measuring by Thousandths of an Inch.
With Wood Handle. With Wing Head Lock Nut.

Number			Each
920BH	Millmens Micrometer	Range: 0 to ½ inch	$21.75
921BH	Millmens Micrometer	Range: 0 to 1 inch	25.75

Packing: One in a box.

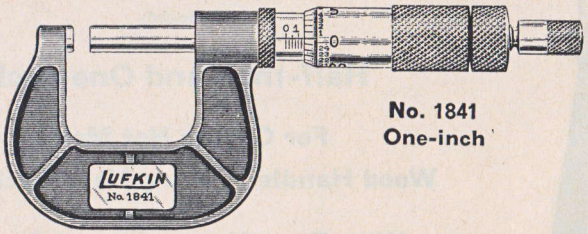
Micrometer Calipers

(Patented)

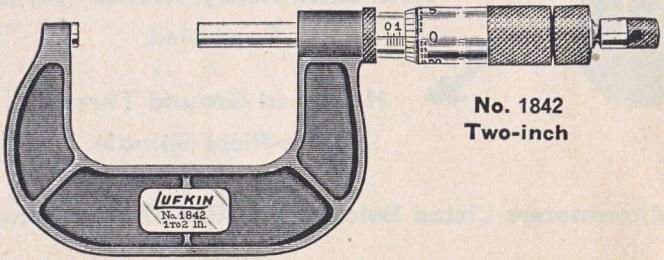
ENAMELED, MEDIUM WEIGHT, RIBBED FRAME

CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil and Spindle Ends

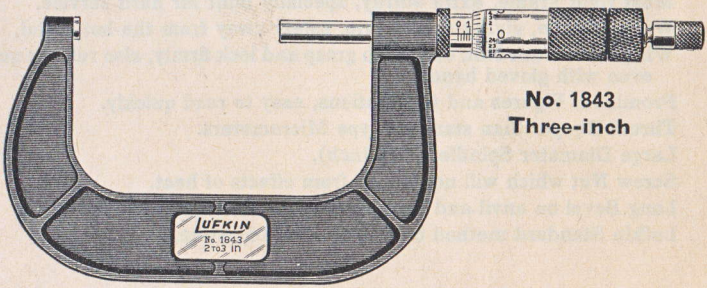
Sizes: 1, 2 and 3-Inch.
Rapid Reading (each thousandth numbered).
Hardened Ground Thread. One-Piece Spindle.



No. 1841
One-inch



No. 1842
Two-inch



No. 1843
Three-inch

FEATURES OF No. 1800 SERIES MICROMETERS

Especially popular with mechanics who wish, along with a fine degree of accuracy, a tool low in price and also of medium weight. Their price is same as the heavy, ribbed Micrometers, the 1900 Series. Their square throat permits measuring to a greater depth on flat pieces.

FOR LISTINGS AND FURTHER DESCRIPTION, SEE PAGE T19.

Micrometer Calipers (Illustrated page T18)

(Patented)

One-inch. Two-inch. Three-inch.
Enameled, Medium Weight, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

CHROME CLAD
Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

These Micrometers, No. 1800 Series, are especially popular with mechanics who wish, along with a fine degree of accuracy, a tool low in price and also of medium weight. Their price is same as the heavy, ribbed Micrometers, the 1900 Series. Another feature, their square throat permits measuring to a greater depth on flat pieces.

These Micrometers have the same smooth action and improved adjustment features as our Full Finished Type, and have Spindle of the same diameter. Enameled Frame, edge and cross ribbed.

Number	For Measuring by Thousandths of an Inch.		Each
	ONE-INCH MICROMETERS		
1811	Plain	Range: 0 to 1 inch.	$ 9.25
1821	With Lock Nut	Range: 0 to 1 inch.	10.50
1831	With Ratchet Stop	Range: 0 to 1 inch.	10.00
1841	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	11.25
	TWO-INCH MICROMETERS		
1812	Plain	Range: 1 to 2 inches.	$10.50
1822	With Lock Nut	Range: 1 to 2 inches.	11.75
1832	With Ratchet Stop	Range: 1 to 2 inches.	11.25
1842	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	12.50
Extra for 1-inch Standard. (Supplied only when ordered)			1.50
	THREE-INCH MICROMETERS		
1813	Plain	Range: 2 to 3 inches.	$11.50
1823	With Lock Nut	Range: 2 to 3 inches.	12.75
1833	With Ratchet Stop	Range: 2 to 3 inches.	12.25
1843	With Lock Nut and Ratchet Stop	Range: 2 to 3 inches.	13.50
Extra for 2-inch Standard. (Supplied only when ordered.)			2.00

Number	For Measuring by Ten-thousandths.		Each
	ONE-INCH MICROMETERS		
1811V	Plain	Range: 0 to 1 inch.	$11.75
1821V	With Lock Nut	Range: 0 to 1 inch.	13.00
1831V	With Ratchet Stop	Range: 0 to 1 inch.	12.50
1841V	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	13.75
	TWO-INCH MICROMETERS		
1812V	Plain	Range: 1 to 2 inches.	$13.00
1822V	With Lock Nut	Range: 1 to 2 inches.	14.25
1832V	With Ratchet Stop	Range: 1 to 2 inches.	13.75
1842V	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	15.00
Extra for 1-inch Standard. (Supplied only when ordered.)			1.50
	THREE-INCH MICROMETERS		
1813V	Plain	Range: 2 to 3 inches.	$14.00
1823V	With Lock Nut	Range: 2 to 3 inches.	15.25
1833V	With Ratchet Stop	Range: 2 to 3 inches.	14.75
1843V	With Lock Nut and Ratchet Stop	Range: 2 to 3 inches.	16.00
Extra for 2-inch Standard. (Supplied only when ordered.)			2.00

Packing: One in a box.

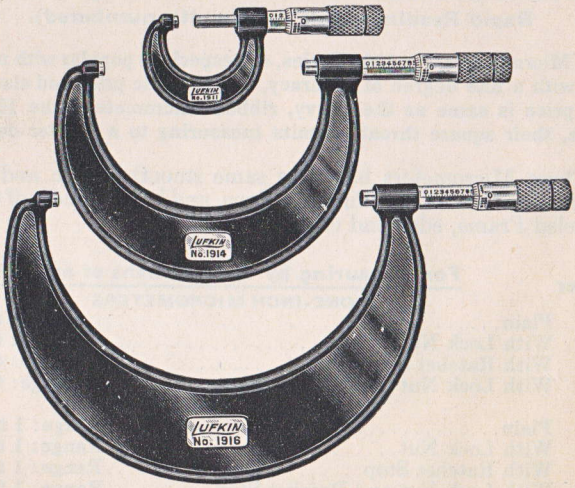
Micrometer Calipers

(Patented)

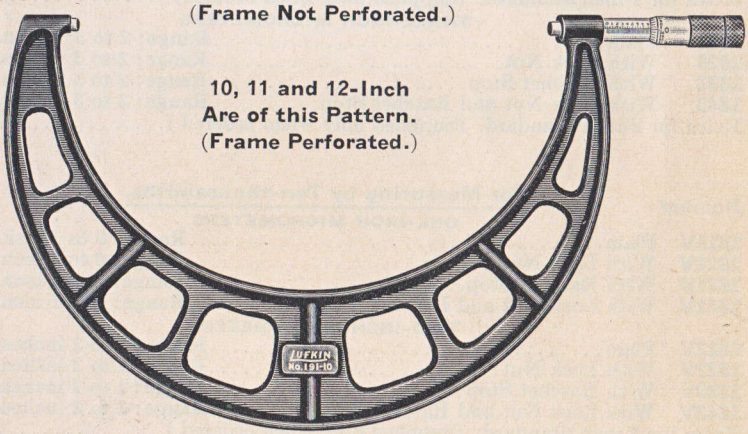
ENAMELED, HEAVY, RIBBED FRAME. No. 1900 Series

Twelve Sizes: 1 to 12-inch. Total Range: 0 to 12 Inches.
Rapid Reading (each thousandth numbered).
Hardened Ground Thread. One-Piece Spindle.

CHROME CLAD
Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends



1, 2, 3, 4, 5, 6, 7, 8 and 9-inch Micrometers Are of above Pattern.
(Frame Not Perforated.)



10, 11 and 12-Inch
Are of this Pattern.
(Frame Perforated.)

Designed especially for Production Work. Extra Sturdy, Ribbed Frame.
Accurate, Lower Priced, Smooth Working. Spindle of Large Diameter (.270 inch).
Built to Withstand Hard Usage.

NOTE: If spindle is removed for cleaning (see page T5) be sure in replacing spindle that tension nut is held firmly against end of hub until threads are engaged in frame.

FOR LISTINGS AND FURTHER DESCRIPTION, see Pages T21, T22 and T23.

Micrometer Calipers (Illustrated page T20).

(Patented)

One-inch. Two-inch. Three-inch.
Enameled, Heavy, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

CHROME CLAD Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

A line of lower priced, accurate Micrometers for production work, built to withstand hard usage. Their enameled, ribbed Frame is extra sturdy. Spindle is of the large diameter, (.270 inch). Adjustment for wear, simple and accurate (see Page T5).

For Measuring by Thousandths of an Inch.

Number			Each
	ONE-INCH MICROMETERS		
1911	Plain	Range: 0 to 1 inch.	$ 9.25
1921	With Lock Nut	Range: 0 to 1 inch.	10.50
1931	With Ratchet Stop	Range: 0 to 1 inch.	10.00
1941	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	11.25
	TWO-INCH MICROMETERS		
1912	Plain	Range: 1 to 2 inches.	$10.50
1922	With Lock Nut	Range: 1 to 2 inches.	11.75
1932	With Ratchet Stop	Range: 1 to 2 inches.	11.25
1942	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	12.50
Extra for 1-inch Standard. (Supplied only when ordered.)			1.50
	THREE-INCH MICROMETERS		
1913	Plain	Range: 2 to 3 inches.	$11.50
1923	With Lock Nut	Range: 2 to 3 inches.	12.75
1933	With Ratchet Stop	Range: 2 to 3 inches.	12.25
1943	With Lock Nut and Ratchet Stop	Range: 2 to 3 inches.	13.50
Extra for 2-inch Standard. (Supplied only when ordered.)			2.00

For Measuring by Ten-thousandths

Number			Each
	ONE-INCH MICROMETERS		
1911V	Plain	Range: 0 to 1 inch.	$11.75
1921V	With Lock Nut	Range: 0 to 1 inch.	13.00
1931V	With Ratchet Stop	Range: 0 to 1 inch.	12.50
1941V	With Lock Nut and Ratchet Stop	Range: 0 to 1 inch.	13.75
	TWO-INCH MICROMETERS		
1912V	Plain	Range: 1 to 2 inches.	$13.00
1922V	With Lock Nut	Range: 1 to 2 inches.	14.25
1932V	With Ratchet Stop	Range: 1 to 2 inches.	13.75
1942V	With Lock Nut and Ratchet Stop	Range: 1 to 2 inches.	15.00
Extra for 1-inch Standard. (Supplied only when ordered.)			1.50
	THREE-INCH MICROMETERS		
1913V	Plain	Range: 2 to 3 inches.	$14.00
1923V	With Lock Nut	Range: 2 to 3 inches.	15.25
1933V	With Ratchet Stop	Range: 2 to 3 inches.	14.75
1943V	With Lock Nut and Ratchet Stop	Range: 2 to 3 inches.	16.00
Extra for 2-inch Standard. (Supplied only when ordered.)			2.00

Packing: One in a box

4, 5 and 6-inch Micrometers of above types—See page T22.

NOTES: These Micrometers in Stainless Steel—See pages T24 and T25.
Metric—These Micrometers can be supplied in metric at prices same as corresponding sizes in inches. Specify by suffix "M," as "1941M," etc.

Micrometer Calipers (Illustrated page T20).

(Patented)

Four-inch. Five-inch. Six-inch.
Enameled, Heavy, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

CHROME CLAD Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

A line of lower priced, accurate Micrometers for production work, built to withstand hard usage. Their enameled, ribbed Frame is extra sturdy. Spindle is of the large diameter (.270 inch). Adjustment for wear, simple and accurate (see page T5).

Number	For Measuring by Thousandths of an Inch.		Each
	FOUR-INCH MICROMETERS		
1914	Plain	Range: 3 to 4 inches.	$12.75
1924	With Lock Nut	Range: 3 to 4 inches.	14.00
1934	With Ratchet Stop	Range: 3 to 4 inches.	13.50
1944	With Lock Nut and Ratchet Stop	Range: 3 to 4 inches.	14.75
Extra for 3-inch Standard. (Supplied only when ordered.)			2.50
	FIVE-INCH MICROMETERS		
1915	Plain	Range: 4 to 5 inches.	$14.25
1925	With Lock Nut	Range: 4 to 5 inches.	15.50
1935	With Ratchet Stop	Range: 4 to 5 inches.	15.00
1945	With Lock Nut and Ratchet Stop	Range: 4 to 5 inches.	16.25
Extra for 4-inch Standard. (Supplied only when ordered.)			3.00
	SIX-INCH MICROMETERS		
1916	Plain	Range: 5 to 6 inches.	$15.25
1926	With Lock Nut	Range: 5 to 6 inches.	16.50
1936	With Ratchet Stop	Range: 5 to 6 inches.	16.00
1946	With Lock Nut and Ratchet Stop	Range: 5 to 6 inches.	17.25
Extra for 5-inch Standard. (Supplied only when ordered.)			3.50

Number	For Measuring by Ten-thousandths.		Each
	FOUR-INCH MICROMETERS		
1914V	Plain	Range: 3 to 4 inches.	$15.25
1924V	With Lock Nut	Range: 3 to 4 inches.	16.50
1934V	With Ratchet Stop	Range: 3 to 4 inches.	16.00
1944V	With Lock Nut and Ratchet Stop	Range: 3 to 4 inches.	17.25
Extra for 3-inch Standard. (Supplied only when ordered.)			2.50
	FIVE-INCH MICROMETERS		
1915V	Plain	Range: 4 to 5 inches.	$16.75
1925V	With Lock Nut	Range: 4 to 5 inches.	18.00
1935V	With Ratchet Stop	Range: 4 to 5 inches.	17.50
1945V	With Lock Nut and Ratchet Stop	Range: 4 to 5 inches.	18.75
Extra for 4-inch Standard. (Supplied only when ordered.)			3.00
	SIX-INCH MICROMETERS		
1916V	Plain	Range: 5 to 6 inches.	$17.75
1926V	With Lock Nut	Range: 5 to 6 inches.	19.00
1936V	With Ratchet Stop	Range: 5 to 6 inches.	18.50
1946V	With Lock Nut and Ratchet Stop	Range: 5 to 6 inches.	19.75
Extra for 5-inch Standard. (Supplied only when ordered.)			3.50

Packing: One in a box

7 to 12-inch Micrometers—See page T23.

NOTES: These Micrometers in Stainless Steel—See pages T24 and T25.
Metric—These Micrometers can be supplied in metric at prices same as corresponding sizes in inches. Specify by suffix "M," as "1944M," etc.

Micrometer Calipers (Illustrated page T20)

(Patented)

Seven-inch. Eight-inch. Nine-inch. Ten-inch. Eleven-inch. Twelve-inch.

Enameled, Heavy, Ribbed Frame.

Hardened Ground Thread. One-Piece Spindle.

Rapid Reading (each thousandth numbered).

CHROME CLAD Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

General Description, See Top of Preceding Page.

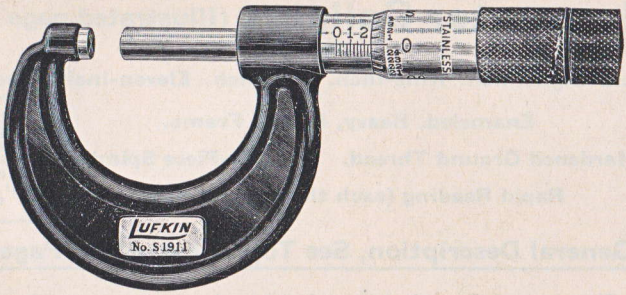
Frames of the 10, 11 and 12-inch sizes are perforated as illustrated on page T20, this to save weight.

For Measuring by Thousandths of an Inch.

Number			Each
	SEVEN-INCH MICROMETERS		
1917	Plain	Range: 6 to 7 inches.	$16.50
1927	With Lock Nut	Range: 6 to 7 inches.	17.75
	Extra for 6-inch Standard. (Supplied only when ordered.)		3.75
	EIGHT-INCH MICROMETERS		
1918	Plain	Range: 7 to 8 inches.	$18.25
1928	With Lock Nut	Range: 7 to 8 inches.	19.50
	Extra for 7-inch Standard. (Supplied only when ordered.)		4.00
	NINE-INCH MICROMETERS		
1919	Plain	Range: 8 to 9 inches.	$19.75
1929	With Lock Nut	Range: 8 to 9 inches.	21.00
	Extra for 8-inch Standard. (Supplied only when ordered.)		4.25
	TEN-INCH MICROMETERS		
191-10	Plain	Range: 9 to 10 inches.	$21.25
192-10	With Lock Nut	Range: 9 to 10 inches.	22.50
	Extra for 9-inch Standard. (Supplied only when ordered.)		4.50
	ELEVEN-INCH MICROMETERS		
191-11	Plain	Range: 10 to 11 inches.	$22.75
192-11	With Lock Nut	Range: 10 to 11 inches.	24.00
	Extra for 10-inch Standard. (Supplied only when ordered.)		4.75
	TWELVE-INCH MICROMETERS		
191-12	Plain	Range: 11 to 12 inches.	$24.00
192-12	With Lock Nut	Range: 11 to 12 inches.	25.25
	Extra for 11-inch Standard. (Supplied only when ordered.)		5.00
	Ratchet Stop on Any of Above Micrometers, Extra		.75

Packing: One in a box.

NOTES: These Micrometers in Stainless Steel—See pages T24 and T25.
Metric—These Micrometers can be supplied in metric at prices same as corresponding sizes in inches. Specify by suffix "M," as "1917M," etc.
For measuring by ten-thousandths inch—Any of the above micrometers can be furnished at extra charge of $2.50 each. Specify by suffix "V", as "1917V", etc.



Stainless Steel Micrometer Calipers

(Patented)

Enameled, Heavy, Ribbed Frame.
Thimble and Hub Are Rust and Stain Proof, Being of Genuine Stainless Steel.
Hardened Ground Thread. One-Piece Spindle.
Micro-Lap Finish on Anvil and Spindle Ends

Rapid Reading (each thousandth numbered).

In Twelve Sizes, Giving Range 0 to 12 Inches.

The popular, enameled type, sturdy Micrometers for production work. Exactly same as the No. 1900 Series, pages T20 to T23, except having thimble and hub of Stainless Steel. This is very valuable in certain industries and under some climatic conditions as it keeps the reading parts free of rust and stain, easy to read accurately, and prolongs the life of the tool. These are smooth-working Micrometers with the same high degree of accuracy and same improved adjustment features as our other types.

In these, as in our other Micrometers, the anvil and spindle are of finest quality tool steel, properly hardened, wear resisting. The spindles are of the larger diameter (.270 inch). The sturdy, ribbed frames withstand hard usage. In sizes to and including 9-inch the frames are as pictured above: in the 10, 11 and 12-inch sizes the frames are perforated, as illustrated bottom page T20, this to save weight.

FOR LISTINGS SEE NEXT PAGE

Special Note: All Micrometers listed on next page can be furnished for measuring to Ten-thousandths inch at $2.50 extra each. Specify by suffix "V," as "S-1911V," etc.

Listings of Stainless Steel Micrometer Calipers

(For Description see page T24.)

Hardened Ground Thread. One-Piece Spindle.

All Micrometers listed below can be furnished for measuring to Ten-thousandths inch, at $2.50 extra each. Specify by suffix "V", as "S-1911V", etc.

For Measuring by Thousandths of an Inch.

Number			Each
	ONE-INCH MICROMETERS		
S-1911	Plain	Range: 0 to 1 inch.	$10.75
S-1921	With Lock Nut	Range: 0 to 1 inch.	12.00
	TWO-INCH MICROMETERS		
S-1912	Plain	Range: 1 to 2 inches.	$12.00
S-1922	With Lock Nut	Range: 1 to 2 inches.	13.25
	THREE-INCH MICROMETERS		
S-1913	Plain	Range: 2 to 3 inches.	$13.00
S-1923	With Lock Nut	Range: 2 to 3 inches.	14.25
	FOUR-INCH MICROMETERS		
S-1914	Plain	Range: 3 to 4 inches.	$14.25
S-1924	With Lock Nut	Range: 3 to 4 inches.	15.50
	FIVE-INCH MICROMETERS		
S-1915	Plain	Range: 4 to 5 inches.	$15.75
S-1925	With Lock Nut	Range: 4 to 5 inches.	17.00
	SIX-INCH MICROMETERS		
S-1916	Plain	Range: 5 to 6 inches.	$16.75
S-1926	With Lock Nut	Range: 5 to 6 inches.	18.00
	SEVEN-INCH MICROMETERS		
S-1917	Plain	Range: 6 to 7 inches.	$18.00
S-1927	With Lock Nut	Range: 6 to 7 inches.	19.25
	EIGHT-INCH MICROMETERS		
S-1918	Plain	Range: 7 to 8 inches.	$19.75
S-1928	With Lock Nut	Range: 7 to 8 inches.	21.00
	NINE-INCH MICROMETERS		
S-1919	Plain	Range: 8 to 9 inches.	$21.25
S-1929	With Lock Nut	Range: 8 to 9 inches.	22.50
	TEN-INCH MICROMETERS		
S-191-10	Plain	Range: 9 to 10 inches.	$22.75
S-192-10	With Lock Nut	Range: 9 to 10 inches.	24.00
	ELEVEN-INCH MICROMETERS		
S-191-11	Plain	Range: 10 to 11 inches.	$24.25
S-192-11	With Lock Nut	Range: 10 to 11 inches.	25.50
	TWELVE-INCH MICROMETERS		
S-191-12	Plain	Range: 11 to 12 inches.	$25.50
S-192-12	With Lock Nut	Range: 11 to 12 inches.	26.75

Ratchet Stop on Any of Above Micrometers, Extra ..... .75

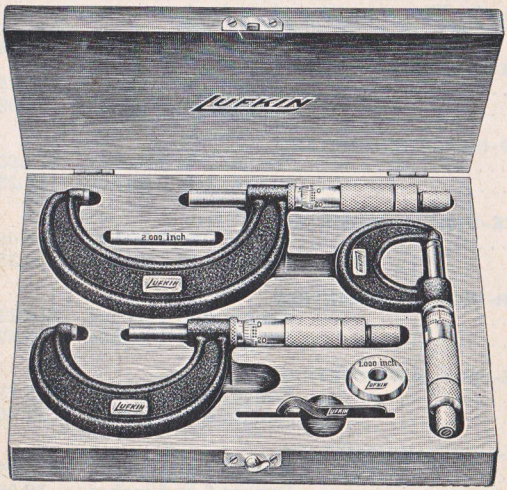
Standards for Above Micrometers..Prices on Pages T21 to T23.

Packing: One in a box.

Micrometer Caliper Sets in Wood Cases

The Sets of Micrometers listed on next page are supplied with Cases as here illustrated.

These Cases are solidly built of choice wood, well finished, and have hinged cover and clasp. They nicely accommodate and thoroughly protect the Micrometers when not in use, and guard against any of the Set or the Standards being mislaid or lost.

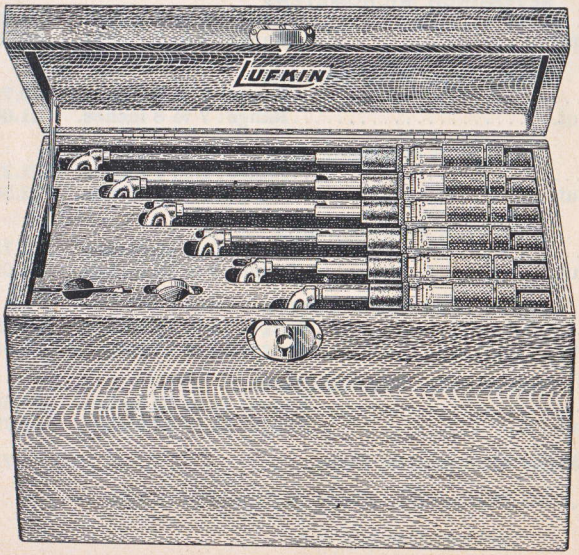


CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on Anvil
and Spindle Ends

Set No. 194A.
Three Micrometers.

Range: 0 to 3 Inch.

(Similar Case is supplied with the other 0 to 3-inch Sets.)



Set No. 194C.
Six Micrometers.

Range: 0 to 6 Inch.

(Similar Case is supplied with the other 0 to 6-Inch Sets.)

Micrometer Caliper Sets in Wood Cases

(Sets illustrated and cases described page T26)

Enameled, Ribbed Frames of Two Types
Medium Weight and Heavy Weight.

Hardened Ground Thread and One-Piece Spindle.
Rapid Reading (each thousandth numbered).
For Measuring by Thousandths of an Inch.

CHROME CLAD Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

Sets of 3 Micrometers. Range: 0 to 3 Inch.
Enameled, Medium Weight, Ribbed Frame.

Set No. (Further description, page T19)		Price, per Set With Standards	Price, per Set Without Standards
181A Plain	1811—1″; 1812—2″; 1813—3″.	$40.75	$37.25
182A With Lock Nut	1821—1″; 1822—2″; 1823—3″.	44.50	41.00
183A With Ratchet Stop	1831—1″; 1832—2″; 1833—3″.	43.00	39.50
184A With Lock and Ratchet	1841—1″; 1842—2″; 1843—3″.	46.75	43.25

Sets of 3 Micrometers. Range: 0 to 3 Inch.
Enameled, Heavy, Ribbed Frame.

Set No. (Further description, page T21)		Price, per Set With Standards	Price, per Set Without Standards
191A Plain	1911—1″; 1912—2″; 1913—3″.	$40.75	$37.25
192A With Lock Nut	1921—1″; 1922—2″; 1923—3″.	44.50	41.00
193A With Ratchet Stop	1931—1″; 1932—2″; 1933—3″.	43.00	39.50
194A With Lock and Ratchet	1941—1″; 1942—2″; 1943—3″.	46.75	43.25

Sets of 4 Micrometers. Range: 0 to 4 Inch.
Enameled, Heavy, Ribbed Frame.

Set No. (Further description, pages T21 and T22)		Price, per Set With Standards	Price, per Set Without Standards
191B Plain	1911—1″; 1912—2″; 1913—3″; 1914—4″.	$58.50	$52.50
192B Lock Nut	1921—1″; 1922—2″; 1923—3″; 1924—4″.	63.50	57.50
193B Ratchet Stop	1931—1″; 1932—2″; 1933—3″; 1934—4″.	61.50	55.50
194B Lock & Ratchet	1941—1″; 1942—2″; 1943—3″; 1944—4″.	66.50	60.50

Sets of 6 Micrometers. Range: 0 to 6 Inch.
Enameled, Heavy, Ribbed Frame.

Set No. (Further description, pages T21 and T22)		Price, per Set With Standards	Price, per Set Without Standards
191C Plain	1911—1″; 1912—2″; 1913—3″. 1914—4″; 1915—5″; 1916—6″.	$96.75	$84.25
192C With Lock Nut	1921—1″; 1922—2″; 1923—3″. 1924—4″; 1925—5″; 1926—6″.	104.25	91.75
193C With Ratchet Stop	1931—1″; 1932—2″; 1933—3″. 1934—4″; 1935—5″; 1936—6″.	101.25	88.75
194C With Lock and Ratchet	1941—1″; 1942—2″; 1943—3″. 1944—4″; 1945—5″; 1946—6″.	108.75	96.25

Standards supplied with all above sets unless otherwise specified.

NOTES: **Micrometers Measuring to Ten-thousandths Inch** —Any of the above sets can be so supplied at extra charge of **$7.50** on sets of three, **$10.00** on sets of four; **$15.00** on sets of six. Specify by suffix "V" as "Set No. **191V-A**," etc.

Metric Micrometers—Any of above sets of Heavy Ribbed Frame Micrometers can be so supplied at price same as corresponding sets in inches. Specify by suffix "M" as "Set No. **191M-A**," etc.

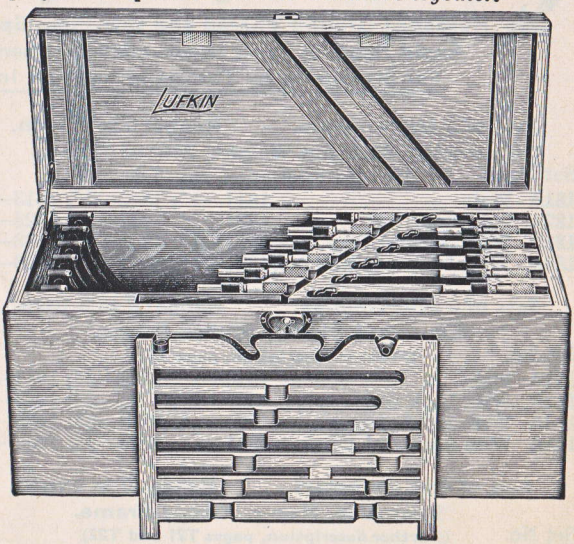
Sets of Micrometers to 12 inches..See page T28.

Micrometer Caliper Sets in Wood Cases

Below are listed Sets of Larger Micrometers (6 to 12-inch); also Sets of Twelve Micrometers (range 0 to 12 inch).

A substantial, well finished Oak Case is regularly supplied with each Set. It has hinged cover and good lock and nicely accommodates the Micrometers and the Standards in Rack illustrated below. Case is a great aid in keeping the complete Set and its Standards together.

CHROME CLAD
Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends



Standards supplied with all sets unless otherwise specified.

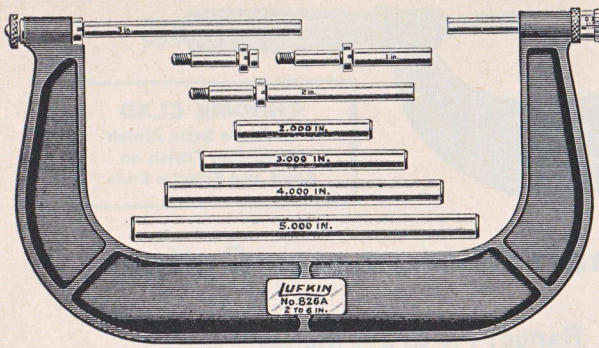
All Have Enameled, Heavy, Ribbed Frame.

Hardened Ground Thread and One-Piece Spindle.
Rapid Reading (each thousandth numbered).
For Measuring by Thousandths of an Inch.

Set No.		Price, per Set With Standards	Price, per Set Without Standards
	Sets of 6 Micrometers. Range: 6 to 12 Inch.		
191D	Plain. 1917, 7″; 1918, 8″; 1919, 9″; 191-10, 10″; 191-11, 11″; 191-12, 12″	$166.25	$140.00
192D	With Lock Nut. 1927, 7″; 1928, 8″; 1929, 9″; 192-10, 10″; 192-11, 11″; 192-12, 12″	173.75	147.50
	Ratchet Stop on above Micrometers...Extra per set. $4.50		
	Sets of 12 Micrometers. Range: 0 to 12 Inch.		
191E	Plain. 1911, 1″; 1912, 2″; 1913, 3″; 1914, 4″; 1915, 5″; 1916, 6″; 1917, 7″; 1918, 8″; 1919, 9″; 191-10, 10″; 191-11, 11″; 191-12, 12″	$262.25	$223.50
192E	With Lock Nut. 1921, 1″; 1922, 2″; 1923, 3″; 1924, 4″; 1925, 5″; 1926, 6″; 1927, 7″; 1928, 8″; 1929, 9″; 192-10, 10″; 192-11, 11″; 192-12, 12″	277.25	238.50
	Ratchet Stop on above Micrometers...Extra per set **$9.00**		

NOTES: Metric Micrometers—Any of above sets can be so supplied at price same as corresponding sets in inches. Specify by suffix "M" as "Set No. 191M-D" etc. Smaller Sets of Micrometers—See pages T26 and T27.

Micrometers Measuring to Ten-thousandths Inch—Any of the above sets can be so supplied at extra charge of **$15.00** on sets of six, **$30.00** on sets of twelve. Specify by suffix "V" as "Set No. 191V-D," etc.



CHROME CLAD
Non-Glare, Satin Finish. Micro-Lap Finish on Anvil and Spindle Ends

Micrometer Calipers with Interchangeable Anvils

(Patented)

Ranges: 0 to 4-inch. 2 to 6-inch.

Enameled, Medium Weight, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

Each covering a wide range of measurement, these Micrometers are popular in many auto service and machine shops. Each Micrometer is supplied with a set of readily interchangeable anvils. These anvils are accurately and securely held in place by knurled nut and each has adjustment nut to maintain its individual length.

These Micrometers have our standard adjustment features. Frame is edge and cross ribbed and has square throat which permits measuring to a greater depth on flat pieces.

Number	For Measuring by Thousandths of an Inch.	Price, Each With Standards	Price, Each Without Standards
	0 TO 4-INCH MICROMETERS		
824AX	With Lock Nut. . . . . Range: 0 to 4 inch.	$32.50	$27.00
844AX	With Lock Nut and Ratchet Stop. Range: 0 to 4 inch.	33.25	27.75
	2 TO 6-INCH MICROMETERS		
826A	With Lock Nut. . . . . Range: 2 to 6 inch.	$39.25	$29.75
846A	With Lock Nut and Ratchet Stop. Range: 2 to 6 inch.	40.25	30.50

Metric Micrometer Calipers with Interchangeable Anvils

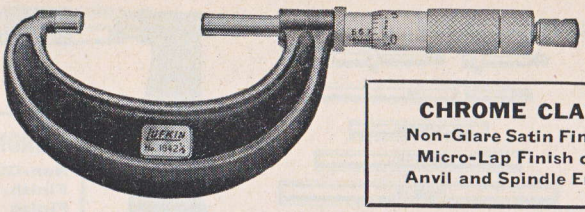
Ranges: 0 to 100 MM. 50 to 150 MM.

Enameled, Medium Weight, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.

Number	For Measuring by Hundredths of a Millimeter.	Price, Each With Standards	Price, Each Without Standards
824AX-M	With Lock Nut. . . . . Range: 0 to 100 mm.	$32.50	$27.00
844AX-M	With Lock Nut and Ratchet Range: 0 to 100 mm.	33.25	27.75
826A-M	With Lock Nut. . . . . Range: 50 to 150 mm.	39.25	29.75
846A-M	With Lock Nut and Ratchet. Range: 50 to 150 mm.	40.25	30.50

Packing: One only in hinged wooden box with clasp.

Standards supplied with all above Micrometers unless otherwise specified.



CHROME CLAD
Non-Glare Satin Finish
Micro-Lap Finish on
Anvil and Spindle Ends

Crankshaft Micrometer Calipers

Range: 1½ to 2½ inches

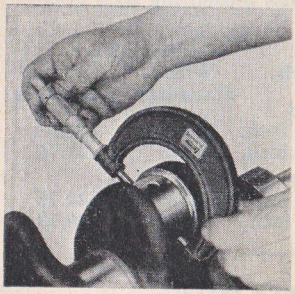
Sturdy, Enameled Ribbed Frame

Hardened Ground Thread

One Piece Spindle

Rapid Reading

(each thousandth numbered)



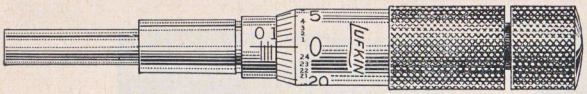
For accurately measuring crankshaft Connecting Rod Journals in Car and Truck motors. Graduations are on the under side of the hub in plain view for accurate measuring without removing micrometer from the work. The Chrome-Clad Satin Finish eliminates glare, makes reading easier in good or poor light. These Crankshaft Micrometers have a three-inch frame, with special anvil and spindle lengths.

For Measuring by Thousandths of an Inch

No. 1942½ With Lock Nut and Ratchet Stop ..... **Ea. $12.00**

Extra for 2-inch Standard (Supplied only when ordered).... **Ea. 2.00**

Packing: One in a box



CHROME CLAD
Non-Glare, Satin Finish. Micro-Lap Finish on Spindle End.

Micrometer Heads

(Patented)

Half-inch. One-inch.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

These Heads have the same improved features of adjustment for wear, tension, etc., as our complete Micrometers.

Readily attached to machines, tools, special gages, etc., and thus used where measurements with Micrometer accuracy are required. Adjusting wrench is furnished with each Head.

Number	Half-inch Micrometer Heads	Each
	For Measuring by Thousandths of an Inch.	
010	Plain. . . . . Range: 0 to ½ inch.	$6.75
030	With Ratchet Stop. . . . . Range: 0 to ½ inch.	6.75
	For Measuring by Ten-thousandths.	
010V	Plain. . . . . Range: 0 to ½ inch.	$9.25
030V	With Ratchet Stop. . . . . Range: 0 to ½ inch.	9.25

Number	One-inch Micrometer Heads	Each
	For Measuring by Thousandths of an Inch.	
011	Plain. . . . . Range: 0 to 1 inch.	$8.25
031	With Ratchet Stop. . . . . Range: 0 to 1 inch.	8.25
	For Measuring by Ten-thousandths.	
011V	Plain. . . . . Range: 0 to 1 inch.	$10.75
031V	With Ratchet Stop. . . . . Range: 0 to 1 inch.	10.75

NOTE: **Lock Nut**—Furnished when specified, and without extra charge, on 1-inch and 25-mm Micrometer Heads.

Metric Micrometer Heads

13 MM 25 MM.

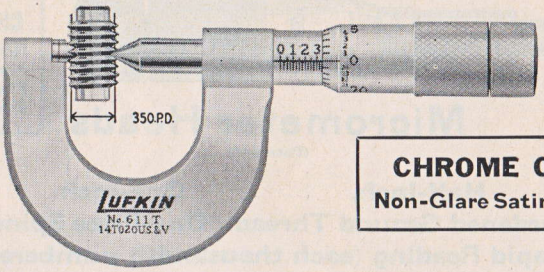
Hardened Ground Thread. One-Piece Spindle.

These Heads are metric, otherwise they are same as those above. They are adjustable and adjusting wrench is furnished with each one.

Number	For Measuring by Hundredths of a Millimeter.	Each
010M	Plain. . . . . Range: 0 to 13 mm.	$6.75
030M	With Ratchet Stop. . . . . Range: 0 to 13 mm.	6.75
011M	Plain. . . . . Range: 0 to 25 mm.	8.25
031M	With Ratchet Stop. . . . . Range: 0 to 25 mm.	8.25

Length lower end of barrel to shoulder:
On ½-inch and 13 mm., is 25/64ths inch, approx. (10 mm.).
On 1-inch and 25 mm., is ¾ths inch, approx. (19 mm.).
Diameter of barrel on all above Micrometer Heads is ⅜ inch (9.5 mm.).

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish

Screw Thread Micrometer Calipers

(Patented)

One-inch. Two-inch.
Full Finished Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

Screw Thread Micrometers are used for measuring the Pitch Diameter of screw threads. These are of the same general construction as our regular full finished Micrometers, and have the same improved adjustment features.

The spindle and anvil ends are shaped to conform to the standard angle of threads for which they are selected. At a direct reading these Micrometers give the Pitch Diameter, which equals the outside basic diameter less the depth of one thread. All are plain, i.e. without lock nut or ratchet stop. All are supplied with swivel anvils.

Always Specify Range of Threads in Addition to Stock Number.

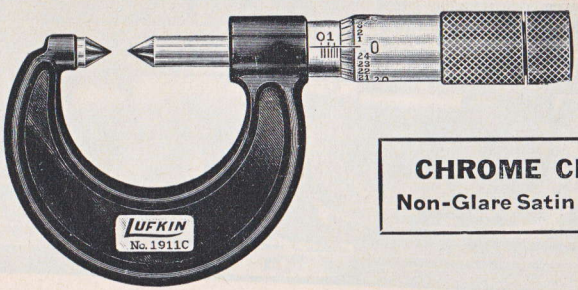
For Measuring by Thousandths of an Inch.

Number.	Range of Threads Per Inch	Capacity	Form of Thread	Each
611T	**8-13** Threads	1-inch		$17.75
611T	**14-20** Threads	1-inch		17.75
611T	**22-30** Threads	1-inch	V	17.75
611T	**32-40** Threads	1-inch	and American National.	17.75
612T	**4½-7** Threads	2-inch	(Amer. Nat'l. formerly called U. S. Standard).	$23.75
612T	**8-13** Threads	2-inch		23.75
612T	**14-20** Threads	2-inch		23.75
612T	**22-30** Threads	2-inch		23.75

Standard—A 1-inch Standard is furnished with each 2-inch Micrometer.

Tables of Pitch Diameters and Other Screw Thread Data—See Pages T132 to T135.

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish

Thread Comparator Micrometer Caliper

(Patented)

Enameled, Heavy, Ribbed Frame.
Hardened Ground Thread. One-Piece Spindle.
Rapid Reading (each thousandth numbered).

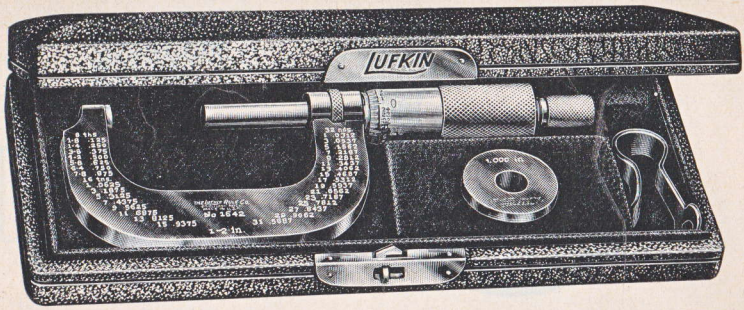
This Micrometer has many uses, although it will not accurately measure the Pitch Diameter of threads. It is especially suitable for making quick comparisons in cutting screw threads, for measuring web thickness of drills and taps and for measuring in small grooves or recesses where a regular Micrometer cannot be used.

The anvil and spindle faces are conical, with points about 1/64th inch flat rather than sharp. The Micrometer is at zero when these points are in contact.

For Measuring by Thousandths of an Inch.

Number		Each
1911C	Plain.....Range: 0 to 7/8 inch.	$11.50

Packing: One in a box.

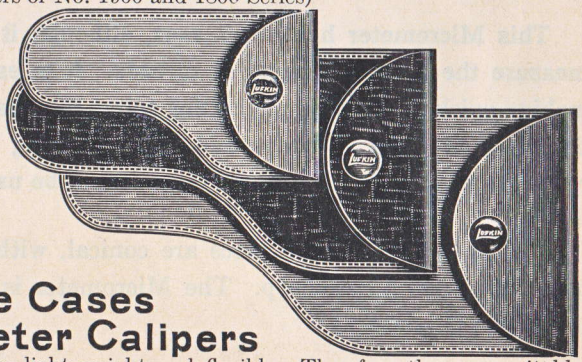


Plush-Lined Leather Cases for Micrometer Calipers

These fine appearing, rigid cases are the best protection for Micrometers. They exclude dust and grit, and protect against scratches and other damage resulting from contact with other tools.

These fitted cases are of solid construction with square edges and rounded corners, are lined with black plush and outside is covered with black, seal-grain, genuine leather. Cover is hinged and has slide clasp.

Number		Price, Each
61	Case for One-Inch Full Finished Micrometers. (1-inch Micrometers such as No. 1600 Series)	$1.85
62	Case for Two-Inch Full Finished Micrometers. (2-inch Micrometers such as No. 1600 Series)	2.50
91	Case for One-Inch Enameled Micrometers. (1-inch Micrometers of No. 1900 and 1800 Series)	1.85
92	Case for Two-Inch Enameled Micrometers. (2-inch Micrometers of No. 1900 and 1800 Series)	2.50



Flexible Cases for Micrometer Calipers

These Soft Cases are light weight and flexible. Therefore they are suitable for pocket use as well as for containing the tool when it is lying about, protecting it from dust, grit, etc. They are equipped with snap fastener.

Always Specify—Soft Case and Type of Micrometer to be Fitted.

Case for **One-Inch Micrometers** is made in two sizes:

One of these fits Full Finished Micrometers, No. 1600 Series. The other fits Enameled, Ribbed Frame Micrometers, Series 1800 and 1900.

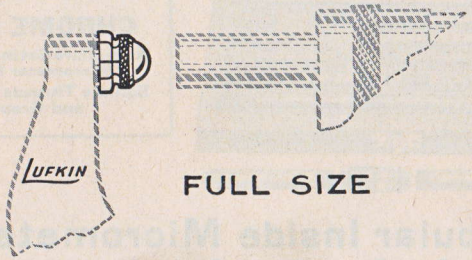
Case for **Two-Inch Micrometers** is made in two sizes:

One of these fits Micrometers of Series 1600 and 1800. The other fits No. 1900 Series.

	Price, each
Soft Case for Half-Inch, One-Inch and Two-Inch Micrometers	$0.70

Ball Attachments for Micrometers

Fit Either the Anvil or the Spindle



These make any of our regular Micrometers suitable for measuring tubing walls, or other rounding surfaces.

Ball Attachment is readily applied and removed by the mechanic, and fitting either anvil or spindle, two of these Balls can be used together. Each Ball fits freely in its retainer, insuring contact with anvil or spindle. Retainer of Ball No. 16 is bright, that of Ball No. 19 is mottled.

When used on standard Micrometers always subtract from reading .200 inch for each Ball used. (Diameter of No. 16 and No. 19 Ball is .200 inch.)

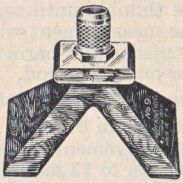
No. **16** fits all our Micrometers of size 1-inch and over except No. 1900 Series.
No. **19** fits all Micrometers of our No. 1900 Series.

Number		Each
16	**Ball Attachment.** (Fits anvil or spindle of .250 inch diameter.).....	$0.80
19	**Ball Attachment.** (Fits anvil or spindle of .270 inch diameter.).....	$0.80

Packing: Six in a box.

Height Gage Attachment

(Patented)

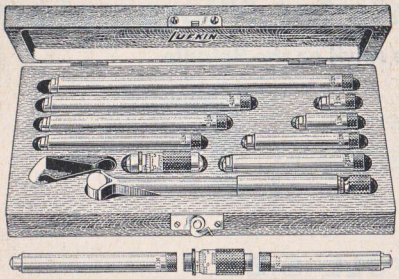


This Attachment combined with our No. 680 Series Inside Micrometers serves as a Micrometer Height Gage. It is very useful on jigs, fixtures and in machine construction work, suitable also for use in lining up shafting, etc.

Well proportioned, accurately grooved, hardened and has mottled finish. Has knurled chuck firmly holding Inside Micrometer Rod in place. Hole extends entirely through, permitting the Micrometer Rod to rest directly on any surface from which measurement is being taken, and essential when working on cylindrical objects.

Number		Each
9A	**Height Gage Attachment**.....	$7.50

Packing: One in a box.



CHROME CLAD
Non-Glare Satin Finish on Micrometer Heads.
Sqindle Threads Hardened and Ground

Tubular Inside Micrometers

Our Finest Line, Series No. 680.

Valuable Features of the LUFKIN No. 680 Line are:

Rapid Reading (each thousandth numbered).
A tension screw nut at end of screw is provided for adjusting tension on threads.
Micrometers 680A, 680B and 6801D will measure down to 1½ inches.
Micrometers 681C, 681D, 681K and 1-inch movement head of 6801D have Lock Nut, firmly holding measurement. Corresponding metric sizes the same.
All Measuring Rods are light weight yet very rigid, being of steel tubing, rather than solid. Each Measuring Rod is adjustable for length.
Measuring Rods can be added to either or both ends of micrometer head. Thus the head is kept central, where mechanic can get the feel most sensitively, adjust length most accurately, and it is also nearest in line of vision, easiest to read precisely. (Illustration on next page demonstrates these advantages.)
Handle (shown in box above and furnished with Sets 680A, 680B and 6801D) also maintains that perfect balance so essential to accuracy, because it may be attached anywhere along the head or the extension rods.

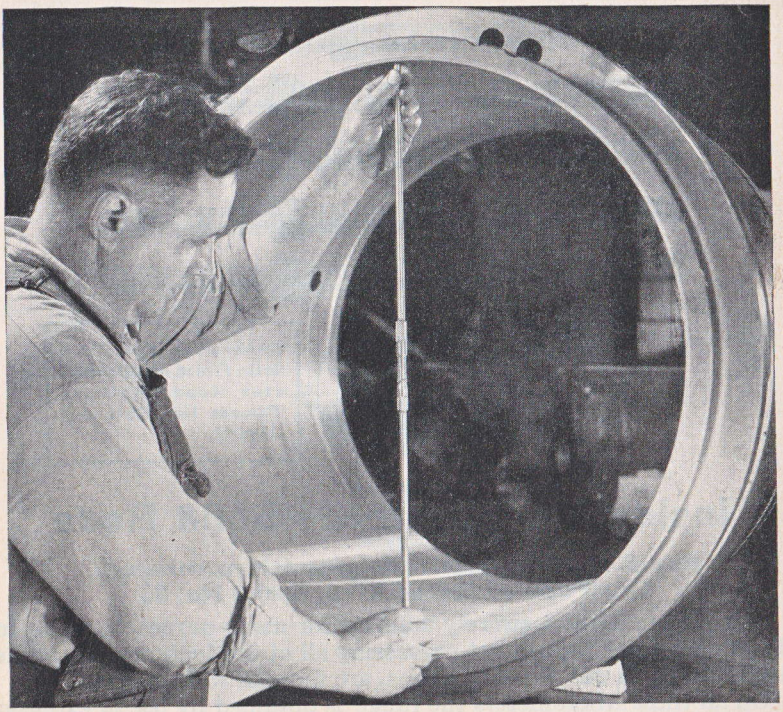
Each measuring rod is marked with its length. Rods are attached to head by removing, with the frictional wrench supplied, the hardened end or anvil of the head. When these sets leave the factory each extension rod is adjusted to measure correctly overall with the head. Should the hardened caps of the head show wear, a method of adjustment is provided (slip the wrench over the graduated sleeve and rotate it in either direction in the thimble until zero line coincides with reading on the hub). As this would affect the measurement when extension rods are used, each rod is individually adjustable, by means of a hardened and ground plug at one end, which can be turned either into or out of the rod.

Number	For Measuring by Thousandths of an Inch.	Each
680A	**Inside Micrometer. Range: 1½ to 8 inches**..... With 5 Measuring Rods. Movement of Screw: ½ inch.	$19.50
680B	**Inside Micrometer. Range: 1½ to 12 inches**..... With 8 Measuring Rods. Movement of Screw: ½ inch.	24.25
681C	**Inside Micrometer. Range: 4 to 24 inches.** With Lock Nut..... With 7 Measuring Rods. Movement of Screw: 1 inch.	27.50
681D	**Inside Micrometer. Range: 4 to 32 inches.** With Lock Nut..... With 8 Measuring Rods. Movement of Screw: 1 inch.	29.75
681K	**Inside Micrometer. Range: 4 to 40 inches.** With Lock Nut..... With 10 Measuring Rods. Movement of Screw: 1 inch.	36.25
6801D	**Inside Micrometer. Range: 1½ to 32 inches**..... With 10 Measuring Rods. Movement of Screw: ½ and 1 in. (two heads). 1-in. head has Lock Nut.	45.00

Packing: Each Set in nicely finished wooden box as illustrated above.

Extra Extension Rods, to increase the range of a Set, can be supplied.

Tubular Inside Micrometers



Using Inside Micrometer No. 681D, built up with extension rod at both ends.

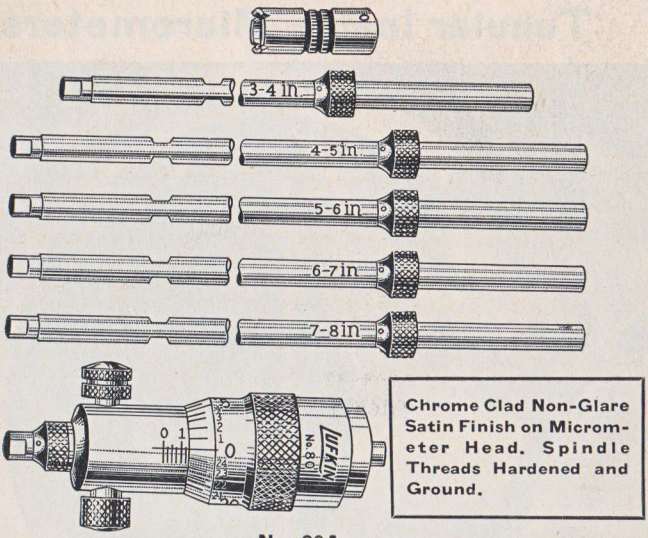
Note that Micrometer Head is central, where it is easiest to get proper feel and to adjust Micrometer to size, and that reading point is directly in the line of vision, where it is easiest to see and to read closely.

Tubular Metric Inside Micrometers Chrome-Clad Satin Finish

For General Description, See Page T36.

Number	For Measuring by Hundredths of a Millimeter.	Each
680A-M	Inside Micrometer. Range: 40 to 200 mm. With 6 Measuring Rods. Movement of Screw: 13 mm.	$19.50
680B-M	Inside Micrometer. Range: 40 to 300 mm. With 8 Measuring Rods. Movement of Screw: 13 mm.	24.25
681C-M	Inside Micrometer. Range: 100 to 600 mm. With Lock Nut. With 7 Measuring Rods. Movement of Screw: 25 mm.	27.50
681D-M	Inside Micrometer. Range: 100 to 800 mm. With Lock Nut. With 8 Measuring Rods. Movement of Screw: 25 mm.	29.75
681K-M	Inside Micrometer. Range: 100 to 1000 mm. With Lock Nut. With 10 Measuring Rods. Movement of Screw: 25 mm.	36.25
6801D-M	Inside Micrometer. Range: 40 to 800 mm. With 10 Measuring Rods. Movement of Screw: 13 and 25 mm. (two heads) 25 mm. Head has Lock Nut.	45.00

Packing: Each Set in nicely finished wooden box.



Chrome Clad Non-Glare Satin Finish on Micrometer Head. Spindle Threads Hardened and Ground.

No. 80A

Inside Micrometers—Solid Rods

(Patented)

Rapid Reading (each thousandth numbered). Our Popular Priced Line, Series No. 80

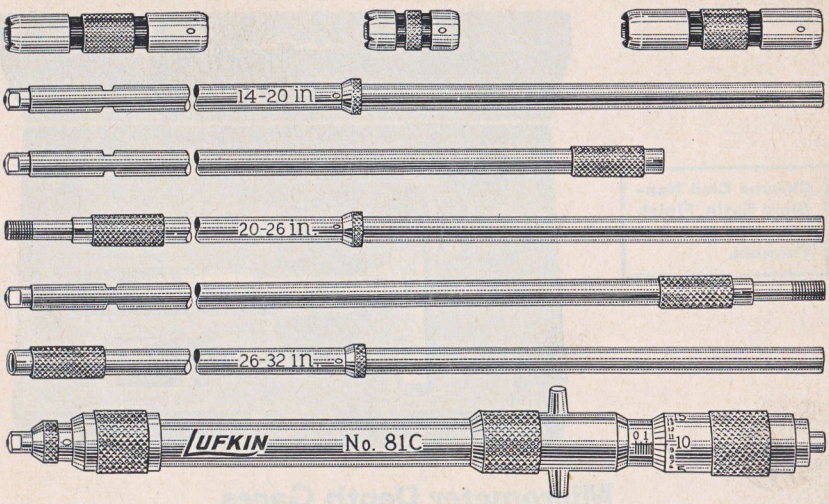
Being accurate and entirely suitable for many purposes, these Inside Micrometers, though not possessing all of the features and refinements offered in our No. 680 Series, are popular with mechanics.

On all these Micrometers the range is obtained by use of extension rods and the collars detailed below. Each rod is marked with the range of the Micrometer when used with that rod. Example: With the 3-to-4 inch rod the movement allows measurements from 3 to 3½ inches. Adding the ½ inch collar increases the range with that same rod from 3½ to 4 inches. Use of collars applies to all extension rods. The zero mark on head, collar and rod should be in alignment in assembling the tool for use. When assembled, the shoulder on the rod fits firmly against the head or collar. Provision is made for adjusting tension and taking up wear on the screw. Contact points of the rods are adjustable for maintaining their individual lengths by means of special wrenches furnished with each set. All contact points are hardened and ground.

In No. 81C, which has the large range, (8 to 32 inches), the extension rods instead of being 5/32 inch solid, are of 5/16 inch steel tubing, making this Micrometer, even when fully extended, extra rigid yet of moderate weight.

In Nos. 80A and 80B, a Handle (furnished as an extra and only when specified) can be inserted in the head by removing the knurled screw opposite the knurled and grooved extension rod lock screw.

FOR LISTINGS SEE NEXT PAGE



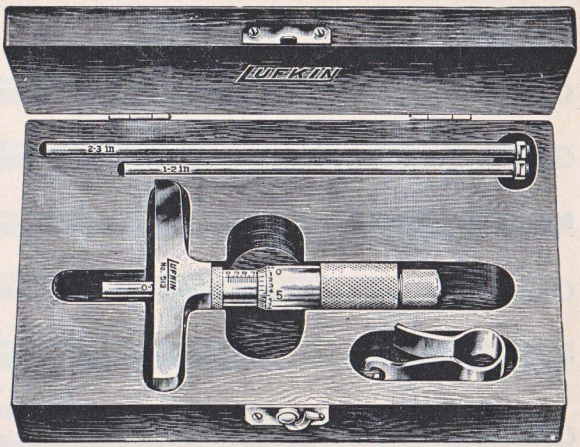
No. 81C

Inside Micrometers (Continued)—Solid Rods

Listings of Series No. 80 Inside Micrometers Described on Page T38

Number	For Measuring by Thousandths of an Inch.	Each
80A	**Inside Micrometer.** **Range: 2 to 8 inches** ..... With 6 rods and ½ inch collar. Movement of Screw: ½ inch.	$12.75
	Fitted Case for above. (Supplied only when ordered)	2.75
	Handle for above .... (Supplied only when ordered)	1.25
80B	**Inside Micrometer.** **Range: 2 to 12 inches**..... With 10 rods and ½ inch collar. Movement of Screw: ½ inch.	16.25
	Fitted Case for above. (Supplied only when ordered)	4.00
	Handle for above .... (Supplied only when ordered)	1.25
81C	**Inside Micrometer.** **Range: 8 to 32 inches**..... With 4 rods and one 1-inch and two 2-inch collars. Movement of Screw: 1 inch.	22.50
	Fitted Case for above. (Supplied only when ordered)	6.00
81D	**Inside Micrometer.** **Range: 2 to 32 inches**..... Consists of Micrometers 80A and 81C.	35.25
	Fitted Case for above. (Supplied only when ordered)	7.50
	Handle for above .... (Supplied only when ordered)	1.25

Packing: One Set in a box.



Chrome Clad Non-Glare Satin Finish on Hub and Thimble.

Micrometer Depth Gages

(Patented)

Oblong Base, 3-Inch and 5-Inch. Lock Nut. One-Inch Movement. Rapid Reading (each thousandth numbered).

For measuring with micrometer accuracy the depth of holes, slots, etc. A valuable, exclusive feature of our Micrometer Depth Gages is the Patent Lock Nut, engaging the rod at any point, holding the reading. Bases have knurled top surface, affording the firm hold essential for accurate measurement. Well finished wood box, as illustrated, is regularly supplied with each Gage.

Rods are inserted through hole in the screw and securely fastened by knurled cap. Each rod has a means of individual length adjustment and end of each is hardened and lapped. Diameter of rods, approximately $\frac{5}{32}$ inch. Both the 3-inch and the 5-inch base are $\frac{15}{32}$ inch wide, and are hardened and ground.

Gages 513 and 515 are supplied with three rods giving measurements from zero to three inches; (513 0 to 6) and (515 0 to 6), have six rods, affording range zero to six inches, by thousandths. Rods only of all lengths are listed separately below. With the longer ones the range of this tool is zero to six inches.

Number	For Measuring by Thousandths of an Inch.	Each
513	Micrometer Depth Gage. 3-inch Base. Range: 0 to 3 inch.	$17.75
515	Micrometer Depth Gage. 5-inch Base. Range: 0 to 3 inch.	22.00
513 0 to 6	Micrometer Depth Gage. 3-inch Base. Range: 0 to 6 inch.	25.75
515 0 to 6	Micrometer Depth Gage. 5-inch Base. Range: 0 to 6 inch.	30.00

For Measuring by Hundredths of a Millimeter.

513M	Metric Micrometer Depth Gage. 3-inch Base. Range: 0 to 75 mm...	$17.75
515M	Metric Micrometer Depth Gage. 5-inch Base. Range: 0 to 75 mm...	22.00

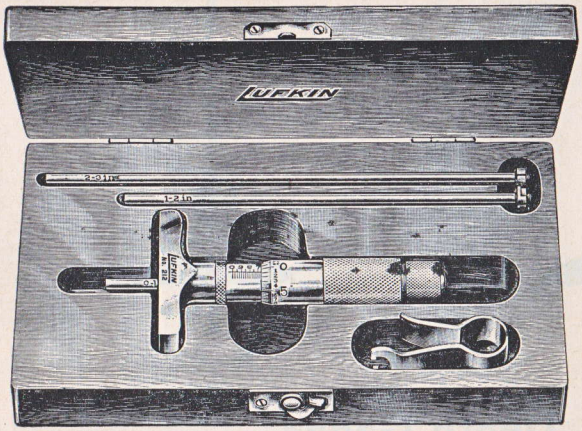
Rods Only for Micrometer Depth Gages.

0- to 1-inch Rod..Each	$2.40	3- to 4-inch Rod..Each	$2.40
1- to 2-inch Rod..Each	2.40	4- to 5-inch Rod..Each	2.50
2- to 3-inch Rod..Each	2.40	5- to 6-inch Rod..Each	2.60

(When ordering Rods Only the finest degree of accuracy is assured by returning the Gage to Factory for fitting.)

Ratchet Stop—Can be supplied on any above. Specify as 513RS. Extra each.. **$0.75**

Packing: Each Gage with its rods in high grade, hinged, wood box with clasp.



CHROME CLAD
Non-Glare Satin Finish on Hub and Thimble

Micrometer Depth Gage

(Patented)

Oblong Base, 2-inch. Lock Nut. One-inch Movement.
Rapid Reading (each thousandth numbered)

This Gage is especially suitable for measuring with micrometer accuracy depths of very small holes, slots, etc. and for use in small places. It has our valuable exclusive feature of Patent Lock Nut, permitting reading to be maintained. Well finished wood box, as illustrated, regularly supplied with each Gage.

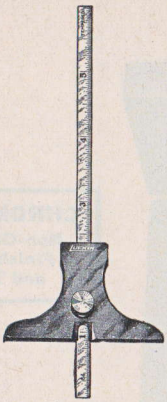
To permit use in small openings and in confined locations, the diameter of the measuring rods of this Gage is but $\frac{3}{32}$ inch, length of oblong base but 2 inches, and its width $\frac{15}{32}$ inch.

Three rods are furnished with this Gage, giving measurements from zero to three inches by thousandths. The rods are inserted through a hole in the screw and are securely fastened by the knurled cap. To compensate for wear, each rod is equipped with an adjusting nut to maintain its length. The end of each rod is hardened and lapped. Base is hardened and ground, and its form assures firm hold.

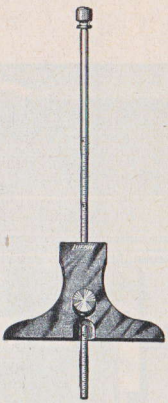
For Measuring by Thousandths of an Inch.

Number		Each
212	**Micrometer Depth Gage**.....2-inch Base. **Range: 0 to 3 inch.**	**$15.25**
Ratchet Stop—Supplied when ordered. Specify as 212RS. Extra Each....		.75

Packing: Each Gage with its rods in high grade, hinged, wood box with clasp.



No. 510



No. 512

Depth Gages

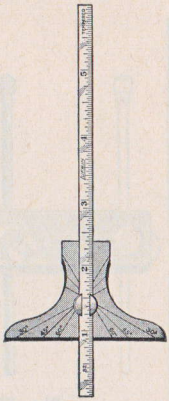
Steel heads, case hardened, well finished and fit the hand nicely. Tempered steel blades, machine divided, fitted in slot of head. Our Gages with round rod have that rod graduated. This is a valuable feature, making unnecessary the use of an additional rule.

Blades can be securely clamped at any point by means of knurled nut and tension spring. Heads give good range, being 2½ inches wide and ⅛ inch thick. They are deeply notched on one side, making reading of measurement easy. Blades are removable for use separately as scales.

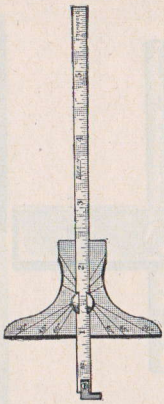
Number		Each
510	**6-inch Depth Gage.** With Narrow (3/16 inch) Spring Tempered Rule. Rule marked one side 32nds, other side 64ths inch. (Rule No. 2310).	$2.75
512	**6-inch Depth Gage.** With Round, Graduated Rod. Rod, while round, is graduated, a distinctive feature. It is tempered and but 1/10 inch in diameter, gives access to small holes. Rod is graduated 4 inches to 32nds. Measurement is arrived at without the additional use of a rule, making this the ideal tool of its kind.	2.75
510M	**15-centimeter Depth Gage.** With 5 mm. wide Spring Tempered Rule. Rule marked one side millimeters, other side ½ mm. (Rule No. 2300M).	2.75
512M	**15-centimeter Depth Gage.** With Round, Graduated Rod. Rod is tempered and being approximately 2½ millimeters in diameter, gives access to small holes. Rod is graduated 10 centimeters to millimeters. Measurement is arrived at without the additional use of a rule.	2.75

Packing: One in a box.

NOTE: Micrometer Depth Gages—See pages T40 and T41.



No. 511



No. H-511

Depth Gages

Combination Depth Gage and Hook Rule

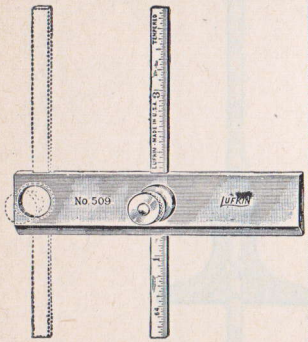
These Depth Gages have degree lines on head, to which the blade (or rule) can be swung and set, serving as a Protractor for some kinds of work. Steel heads, case-hardened, well finished and fit the hand nicely. Tempered Steel Blades, machine divided, fitted in slot of head.

Blades can be securely clamped at any length by means of knurled nut and tension spring. Heads give good range, being 2½ inches wide and ⅛ inch thick. They are deeply notched on one side, making reading of measurement easy. Blade of No. H-511 has hook, making a convenient tool for certain kinds of calipering work. When used as a depth gage, remove hook by simply giving eccentric stud a half turn. All blades are removable for use separately as scales.

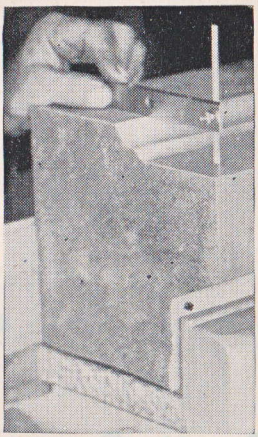
Number		Each
511	**6-inch Depth Gage** With Narrow (3/16 inch) Spring Tempered Rule. Rule marked one side 32nds, other side 64ths inch. (Rule No. 2310). One side of head is marked, both right and left, with 30, 45 and 60-degree lines.	$4.00
H-511	**6-inch Combination Depth Gage and Hook Rule.** With Degree Lines on Head, as described above. With 3/16 inch wide Spring Tempered Rule with Hook. Rule marked one side 32nds, other side 64ths inch. (Rule No. H-2310).	4.85
511M	**15-centimeter Depth Gage** With Degree Lines on Head, as described above. With 5 mm., wide Spring Tempered Rule. Rule marked one side millimeters, other side ½ mm. (Rule No. 2300M).	4.00

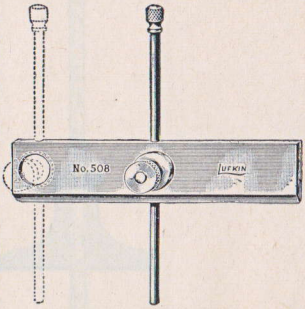
Packing: One in a box.

NOTE: Micrometer Depth Gages—See pages T40 and T41.



No. 509A





No. 508A

Depth Gages

Designed for spanning wider openings, these Depth Gages have bases 3½, 6 and 10 inches wide respectively, a range covering practically all requirements. All these bases have two gaging positions, center and end, hence most suitable for taking difficult measurements. Measuring edge of all these bases is beveled, giving line contact with the work surface.

Blades (rules and rods) fit in head slots and can be securely clamped at any point by knurled nut and tension spring. All are tempered steel. The flat blades are but 3/16 inch wide and are machine divided, one side to 32nds, other side to 64ths inch (Rule No. 2310). They are readily removed for use separately as scales. The round rods are but 1/10 inch in diameter and are not graduated.

Number	Depth Gages with Graduated Steel Rule		Each
509A	With 3½-inch Base.	With 4-inch Rule	$2.80
509B	With 3½-inch Base.	With 6-inch Rule	3.00
509C	With 6 -inch Base.	With 4-inch Rule	3.40
509D	With 6 -inch Base.	With 6-inch Rule	3.60
509E	With 10 -inch Base.	With 6-inch Rule	4.30

Number	Depth Gages with Round Rod.		Each
508A	With 3½-inch Base.	With 3½-inch Rod	$2.00
508B	With 6 -inch Base.	With 6 -inch Rod	2.70
508C	With 10 -inch Base.	With 6 -inch Rod	3.40

Packing: One in a box.

NOTES: Metric—Number 509 series Depth Gages can be furnished with metric rule (Rule No. 2300M). Prices same as Gages with corresponding length rule in inches.

Micrometer Depth Gages—See pages T40 and T41.

Combination Squares—Bevel Protractors Combination Sets

(PAGES T45 TO T52)

General Description

These Tools consist of an accurately machine divided, tempered Steel Rule (or blade), on which slide the Square Head (or stock), the Center Head and the Protractor Head, furnished singly or as a set.

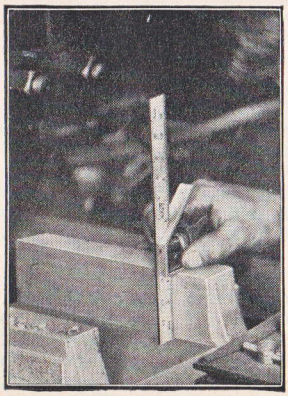
All ground faces and the enameled parts of all Heads are exceptionally well finished. Square Heads have square and miter faces and are all (except the 4-inch and No. 135) equipped with level glass and scriber. All Protractor Heads have level. All heads can be accurately, quickly and securely set at any point along the Blade, and readily removed so Blade can be used separately as a Rule and Square Head as a Level. Arms of our Center Heads are ground to equal length and have ends uniformly machined, to give accurate result on large as well as small diameters. The revolving turret of our Protractor Heads has degrees numbered from 0 to 90 to left and to right of center. Those Protractor Heads which have shoulder extending from only one side of Blade are known either as "single," "plain" or "not reversible"; those with shoulder extending from both sides, as "double" or "reversible." Our reversible Protractor Heads can readily be converted to single type.

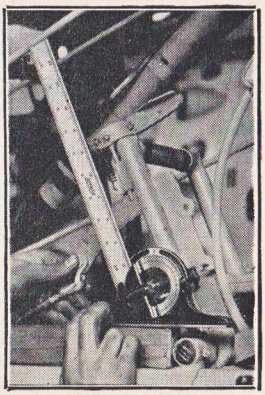
We offer Combination Squares and Sets of two kinds:

With Square and Center Heads drop forged and hardened.

With these Heads cast, i.e. not hardened.

On both types, accuracy and provisions to insure continued accuracy in use are the first considerations in design and manufacture. All handle nicely and present a well balanced, fine appearance.





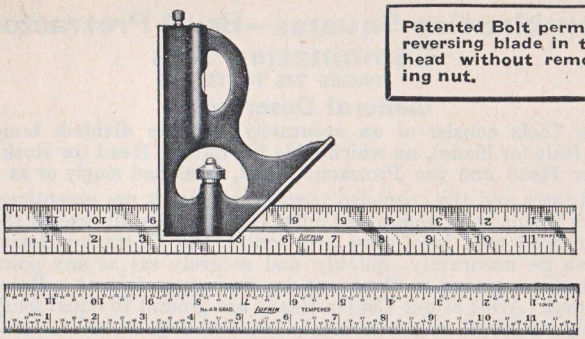
A Combination Set Has Perhaps More Applications in Use Than Any Other Hand Tool Made for Mechanics.

These uses are so many and so varied that this tool is almost indispensable to all mechanics in metal working, machinists, pattern makers and others.

It is an ideal tool for transferring exact measurements and laying out work; is well suited also for leveling surfaces one with another, for measuring and squaring in mortises etc. It serves as a handy gage in many places where micrometer accuracy is not required. We list below but a few of its many applications.

Try and Miter Squares. With adjustable length blade.
(Take the place of a whole set of common squares.)

Height Gage.	**Level.**	**Depth Gage.**	**Plumb.**
Bevel Protractor.	**Steel Scale.**	**Marking Gage.**	**Scriber.**



Patented Bolt permits reversing blade in the head without removing nut.

Showing reverse side of blade

Combination Squares

(Blade with Square Head Only)

Level in Head
(4″ excepted)

Tempered Blade

WITH CAST HEAD

No. 25 Graduation: No. 4.
8ths, 16ths, 32nds, 64ths inch.

Size:			
4-inch	Each	$3.00
6-inch	Each	3.55
9-inch	Each	5.25
12-inch	Each	5.90
18-inch	Each	7.55
24-inch	Each	8.90

No. 25ME
Graduation: Metric & English.

Size:			
10-cm	Each	$3.00
15-cm	Each	3.55
20-cm	Each	5.25
30-cm	Each	5.90
50-cm	Each	7.55
60-cm	Each	8.90

No. 25M Metric Only. Prices as above.

WITH DROP FORGED AND HARDENED HEAD

No. 35 Graduation: No. 4.
8ths, 16ths, 32nds, 64ths inch.

Size:			
4-inch	Each	$3.80
6-inch	Each	4.85
9-inch	Each	6.10
12-inch	Each	6.75
18-inch	Each	8.40
24-inch	Each	9.75

No. 35ME
Graduation: Metric & English.

Size:			
10-cm	Each	$3.80
15-cm	Each	4.85
20-cm	Each	6.10
30-cm	Each	6.75
50-cm	Each	8.40
60-cm	Each	9.75

No. 35M Metric Only. Prices as above.

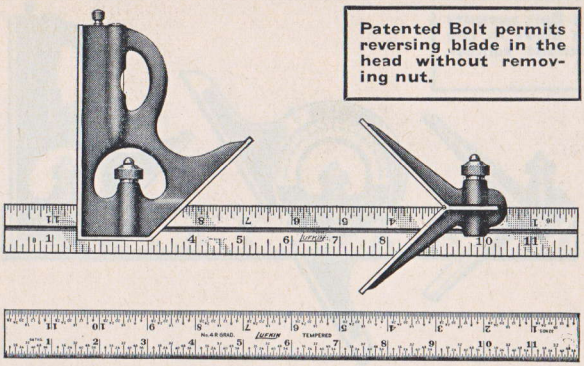
Nos. 25ME and 35ME are marked: One side ½ millimeters and 32nds inch; Other side millimeters and 64ths inch.

Nos. 25M and 35M are marked: Three edges in millimeters; one edge in ½ millimeters.

General Description of Combination Squares—See page T45.

Packing: One in a box.

NOTE: No. 7 Graduation (16ths, 32nds, 64ths and 100ths) can be furnished without extra charge on Nos. 25 and 35.



Showing reverse side of blade

Combination Squares

(Blade with Square and Center Heads)

Level in Square Head

(4″ excepted)

Tempered Blade

WITH CAST HEADS

No. 25C Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
4-inch	Each	$4.45
6-inch	Each	5.00
9-inch	Each	6.70
12-inch	Each	7.35
18-inch	Each	9.00
24-inch	Each	10.35

No. 25C-ME Graduation: Metric & English.

Size:		
10-cm	Each	$4.45
15-cm	Each	5.00
20-cm	Each	6.70
30-cm	Each	7.35
50-cm	Each	9.00
60-cm	Each	10.35

No. 25C-M Metric Only. Prices as above.

WITH DROP FORGED AND HARDENED HEADS

No. 35C Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
4-inch	Each	$6.05
6-inch	Each	7.20
9-inch	Each	9.10
12-inch	Each	9.75
18-inch	Each	11.40
24-inch	Each	12.75

No. 35C-ME Graduation: Metric & English.

Size:		
10-cm	Each	$6.05
15-cm	Each	7.20
20-cm	Each	9.10
30-cm	Each	9.75
50-cm	Each	11.40
60-cm	Each	12.75

No. 35C-M Metric Only. Prices as above.

Nos. 25C-ME and 35C-ME are marked: One side ½ millimeters and 32nds inch; Other side millimeters and 64ths inch.

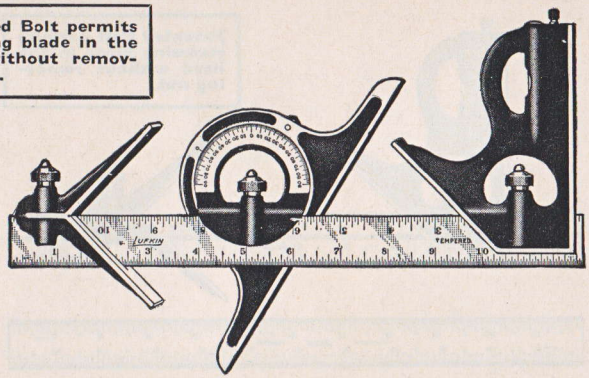
Nos. 25C-M and 35C-M are marked: Three edges in millimeters; One edge in ½ millimeters.

General Description of Combination Squares—See page T45.

Packing: One in a box.

NOTE: No. 7 Graduation (16ths, 32nds, 64ths and 100ths) can be furnished without extra charge on Nos. 25C and 53C.

Patented Bolt permits reversing blade in the head without removing nut.



Combination Sets

(Blade with Square, Center and Protractor Heads)

Protractor head not reversible

Level in All Square and Protractor Heads

Tempered Blade

WITH CAST HEADS

No. 525 Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
9-inch	Each	$11.35
12-inch	Each	12.00
18-inch	Each	13.65
24-inch	Each	15.00

No. 525ME Graduation: Metric & English.

Size:		
20-cm	Each	$11.35
30-cm	Each	12.00
50-cm	Each	13.65
60-cm	Each	15.00

No. 525M Metric Only. Prices as above.

WITH SQUARE & CENTER HEADS DROP FORGED AND HARDENED

No. 535 Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
9-inch	Each	$13.75
12-inch	Each	14.40
18-inch	Each	16.05
24-inch	Each	17.40

No. 535ME Graduation: Metric & English.

Size:		
20-cm	Each	$13.75
30-cm	Each	14.40
50-cm	Each	16.05
60-cm	Each	17.40

No. 535M Metric Only. Prices as above.

Nos. 525ME and 535ME are marked: One side ½ millimeters and 32nds inch; Other side millimeters and 64ths inch.

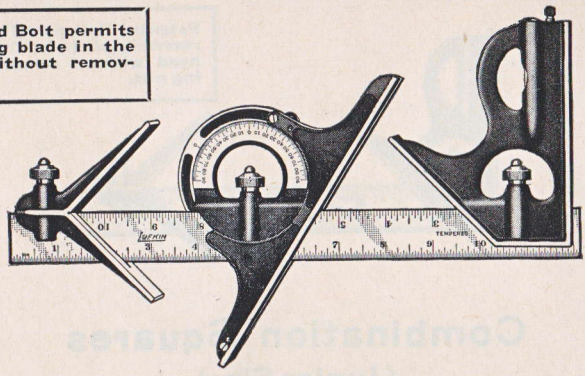
Nos. 525M and 535M are marked: Three edges in millimeters; one edge in ½ millimeters.

General Description of Combination Sets—See page T45.

Packing: One in a box.

NOTE: No. 7 Graduation (16ths, 32nds, 64ths and 100ths) can be furnished without extra charge on Nos. 525 and 535.

Patented Bolt permits reversing blade in the head without removing nut.



Combination Sets

(Blade with Square, Center and Protractor Heads)

Protractor head reversible

Level in All Square and Protractor Heads

Tempered Blade

WITH CAST HEADS

No. 625 Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
9-inch	Each	$13.20
12-inch	Each	13.85
18-inch	Each	15.50
24-inch	Each	16.85

No. 625ME Graduation: Metric & English.

Size:		
20-cm	Each	$13.20
30-cm	Each	13.85
50-cm	Each	15.50
60-cm	Each	16.85

No. 625M Metric Only. Prices as above.

WITH SQUARE & CENTER HEADS DROP FORGED AND HARDENED

No. 635 Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.

Size:		
9-inch	Each	$15.60
12-inch	Each	16.25
18-inch	Each	17.90
24-inch	Each	19.25

No. 635ME Graduation: Metric & English.

Size:		
20-cm	Each	$15.60
30-cm	Each	16.25
50-cm	Each	17.90
60-cm	Each	19.25

No. 635M Metric Only. Prices as above.

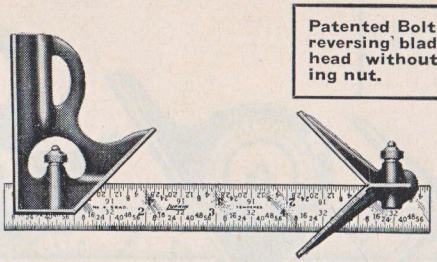
Nos. 625ME and 635ME are marked: One side ½ millimeters and 32nds inch; Other side millimeters and 64ths inch.

Nos. 625M and 635M are marked: Three edges in millimeters; One edge in ½ millimeters.

General Description of Combination Sets—See page T45.

Packing: One in a box.

NOTE: No. 7 Graduation (16ths, 32nds, 64ths and 100ths) can be furnished without extra charge on Nos. 625 and 635.



Combination Squares
(Junior Size)

Blade with Square Head Only

also

Blade with Square and Center Heads

All Heads Drop Forged and Hardened

Readable Graduations (32nds and 64ths numbered)

Tempered Blade

These Drop Forged "Junior" Squares, because of their smaller size and lighter weight, appeal particularly to tool, die and pattern makers.

They are of same general pattern as our Nos. 35 and 35C except having narrower blade (5/8 inch) and smaller square and center heads. Another distinctive feature of value is "Readable" Graduations, the 64ths numbered every 8th division and the 32nds every 4th division.

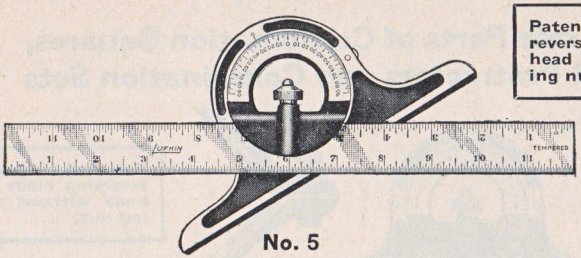
These squares made only with 6-inch blade.

Number		Each
135	Blade with Square Head only. Length Blade: 6 inches..... No. 4 Graduation—8ths, 16ths, 32nds, 64ths inch.	$5.40
135C	Blade with Square and Center Heads. Length Blade: 6 inches... No. 4 Graduation—8ths, 16ths, 32nds, 64ths inch.	7.75
	Blade Only (For No. **135** or **135C**) Length: 6 inches. Graduation: No. 4.....	2.40

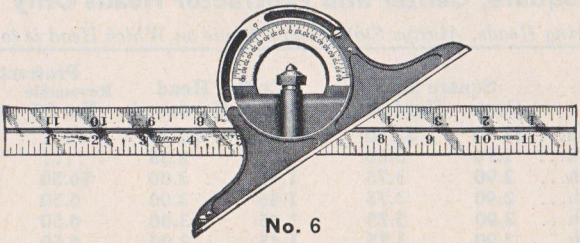
General Description of Combination Squares—See page T45.

Packing: One in a box.

Patented Bolt permits reversing blade in the head without removing nut.



No. 5
Head is Single, i.e. Not Reversible
(Has shoulder on one side of blade)



No. 6
Head is Double, i.e. Reversible
(Has shoulder on both sides of blade) **Constructed convertible to single type.**

Bevel Protractors

(Blade with Protractor Head Only)

Level in All Heads
Tempered Blade

WITH HEAD NOT REVERSIBLE

No. 5 Graduation: No. 4.
8ths, 16ths, 32nds, 64ths inch.

Size:			
9-inch	Each	$7.00
12-inch	Each	7.65
18-inch	Each	9.30
24-inch	Each	10.65

No. 5ME
Graduation: Metric & English.

Size:		
20-cm	Each	$7.00
30-cm	Each	7.65
50-cm	Each	9.30
60-cm	Each	10.65

No. 5M Metric Only. Prices as above.

WITH REVERSIBLE HEAD

No. 6 Graduation: No. 4.
8ths, 16ths, 32nds, 64ths inch.

Size:		
9-inch	Each	$8.85
12-inch	Each	9.50
18-inch	Each	11.15
24-inch	Each	12.50

No. 6ME
Graduation: Metric & English.

Size:		
20-cm	Each	$8.85
30-cm	Each	9.50
50-cm	Each	11.15
60-cm	Each	12.50

No. 6M Metric Only. Prices as above.

Nos. 5ME and 6ME are marked: One side ½ millimeters and 32nds inch; Other side millimeters and 64ths inch.

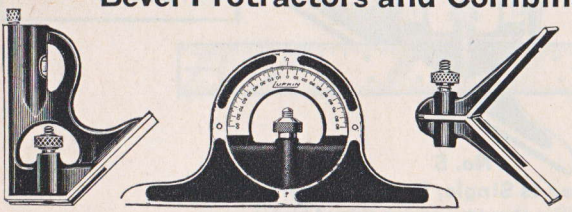
Nos. 5M and 6M are marked: Three edges in millimeters; one edge in ½ millimeters.

General Description of Bevel Protractors—See Page T45.

Packing: One in a box.

NOTE: No. 7 Graduation (16ths, 32nds, 64ths and 100ths) can be furnished without extra charge on Nos. 5 and 6.

Separate Parts of Combination Squares, Bevel Protractors and Combination Sets



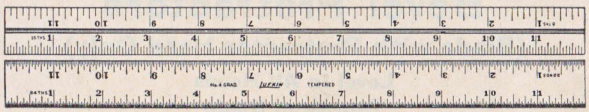
Patented Bolt permits reversing blade in the head without removing nut.

Square, Center and Protractor Heads Only

In Ordering Heads, Always State Length Blade on Which Head is to be Used

For Blade Length	Square Head Cast	Square Head Hardened	Center Head Cast	Center Head Hardened	Protractor Head Reversible No. 06	Protractor Head Not Reversible No. 05
4-inch. Each...	$1.70	$2.50	$1.45	$2.25	....	....
6-inch. Each...	1.70	3.00	1.45	2.35	....	....
9-inch. Each...	2.90	3.75	1.45	3.00	$6.50	$4.65
12-inch. Each...	2.90	3.75	1.45	3.00	6.50	4.65
18-inch. Each...	2.90	3.75	1.45	3.00	6.50	4.65
24-inch. Each...	2.90	3.75	1.45	3.00	6.50	4.65

Scribers Only.....Each $0.35
Bolt (with nut and spring).....Each .55



Combination Square Blades Only

No. 2504 Blade. Graduation No. 4. (8ths, 16ths, 32nds, 64ths inch.)
No. 2507 Blade. Graduation No. 7. (16ths, 32nds, 64ths, 100ths inch.)

Length.....	4-inch	6-inch	9-inch	12-inch	18-inch	24-inch	36-inch
Price, each.....	$1.30	$1.85	$2.35	$3.00	$4.65	$6.00	$19.40

No. 2504R Blade. Grad. No. 4 (8ths, 16ths, 32nds, 64ths.) Readable 32nds, 64ths.
No. 2507R Blade. Graduation No. 7. (16ths, 32nds, 64ths, 100ths inch.) Readable 32nds, 64ths and 100ths.
No. 2516R Blade. Grad. No. 16 (32nds, 64ths, 50ths, 100ths). Readable 50ths and 100ths.

Length.....	12-inch	18-inch	24-inch
Price, each.....	$3.50	$5.55	$7.20

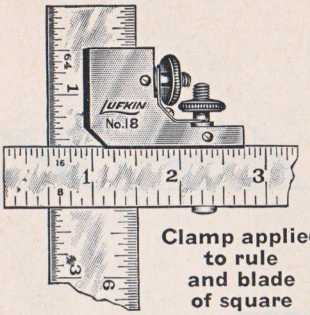
No. S-2504 Stainless Steel Blade. Graduation No. 4 (8ths, 16ths, 32nds, 64ths inch).

Length.....	12-inch	18-inch	24-inch
Price, each.....	$4.95	$8.20	$10.90

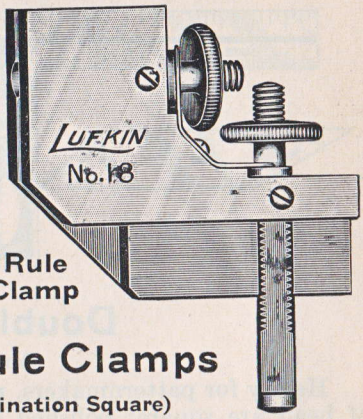
No. 2500ME Blade. Grad. ½ mm. and 32nds inch; mm. and 64ths inch.
No. 2500M Blade. Grad. 3 edges in mm; 1 edge in ½ mm.

Length....	10 cm.	15 cm.	20 cm.	30 cm.	50cm.	60 cm.
Price, each.	$1.30	$1.85	$2.35	$3.00	$4.65	$6.00

Blade Only for Nos. 135 and 135C, listed foot of page T50.
Combination Square Blades in Shrink Graduations—See page T115.



Clamp applied to rule and blade of square



Rule Clamp

Right Angle Rule Clamps

(Attachment for Combination Square)

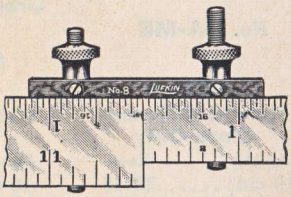
Used with Combination Square Blades and Heads these Rule Clamps afford many valuable applications. Interference of the two bolts and nuts is eliminated and operation simplified by means of the clip with prongs at each end, pictured above and described below.

These Right Angle Rule Clamps will firmly hold at right angles a combination square blade (of 12, 18 or 24-inch length), and any regular steel rule not over one inch wide. Can also be applied to Thin Steel Squares, such as our No. 139. A feature is the clip with prongs at each end. These prongs at all times hold both clamp nuts in place. Thumb nuts are knurled and of good size. Clamp No. 18B has the longer blade seats.

Body of 18A is $1\frac{1}{2}$x$1\frac{25}{32}$x$1\frac{1}{32}$ inch. Body of 18B is $2\frac{5}{8}$x$2\frac{5}{16}$x$1\frac{1}{32}$ inch.

Number		Each
18A	**Right Angle Rule Clamp**.....	$2.20
	Length of blade seats: Slotted leg..$1\frac{7}{16}$ inch. Open leg..$1\frac{9}{16}$ inch.	
18B	**Right Angle Rule Clamp**.....	2.50
	Length of blade seats: Slotted leg..$2\frac{7}{16}$ inch. Open leg..$2\frac{5}{16}$ inch.	

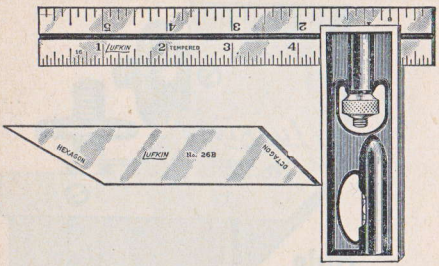
Rule Clamp



Used when a measurement greater than the length of any single rule at hand must be accurately taken. This Clamp firmly holds two rules end to end as here shown. As the clamp bolts are independently adjustable (by means of knurled thumb nuts) this Clamp will join two rules whether they be of same or different width or thickness. The width capacity is $1\frac{1}{4}$ inches. This device is in mottled blue finish. It is popular because the ordinary tool chest will not accommodate rules over 12 inches long.

No. 8 Rule Clamp.....Each $2.00

Packing: All Clamps on this page—Four in a box.



Double Squares

Tempered Blades

Handy for patternmakers, machinists and toolmakers. Both faces of head are square; polished and enameled parts are well finished. Blade length adjustable by moving head. Head securely set at any point by thumb screw. The 6-inch and 15-cm. Squares have level glass.

This Square is Furnished in Various Combinations With Following Blades:

Standard Blade.....In various graduations, detailed below.
Bevel Blade.....Gives hexagon and octagon angles, and is so marked.
Drill Grinding Blade..Converts tool into a good Drill Grinding Gage. Markings and uses of this blade—See next page.

With No. 4 Graduation—8ths, 16ths, 32nds, 64ths Inch

With Graduated Blade Only — No. 26A		With Graduated and Bevel Blades — No. 26B		With Graduated, Bevel and Drill Grinding Blades — No. 26C	
Length	Each	Length	Each	Length	Each
4-inch	$3.35	4-inch	$4.30	.....	
6-inch	5.15	6-inch	6.25	6-inch	$8.50

(6-inch Blade of No. 135, listed foot of page T50, can be used with the head of Nos. 26A and 26B 4-inch.)

Graduated Metric and English

No. **26A-ME** No. **26B-ME** No. **26C-ME**

Graduated Metric Only

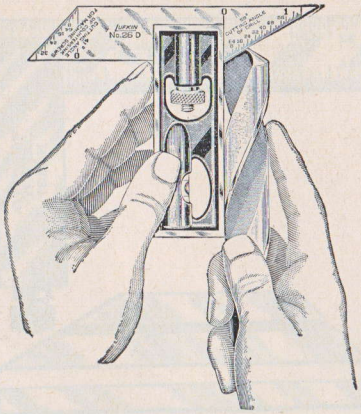
No. 26A-M — With Graduated Blade Only		No. 26B-M — With Graduated and Bevel Blades		No. 26C-M — With Graduated, Bevel and Drill Grinding Blades	
Length	Each	Length	Each	Length	Each
10-cm	$3.35	10-cm	$4.30	.....	
15-cm	5.15	15-cm	6.25	15-cm	$8.50

Nos. 26A-ME, B-ME, and C-ME are marked: One side ½ millimeters and 32nds inch; other side millimeters and 64ths inch.

Nos. 26A-M, B-M, and C-M are marked: Three edges in millimeters; one edge in ½ millimeters.

Packing: One in a box.

NOTE: Separate parts of Double Squares—See foot of page T55.



Drill Grinding Gage

Tempered Blade

An ideal Drill Gage, yet of moderate price. Will most readily and accurately test cutting edges of drills and countersinks for proper angle, and point for proper centering. The extra width of face of head, to which drill is held, 9/16 inch, is a most valuable feature.

The head is that of the 6-inch Double Square (page T54). Polished and enameled parts of head are well finished. Slotted blade slides readily in the head and may be securely set by thumb screw.

The bevel of blade at one end is 59 degrees, the cutting angle of drills; and at the other end 41 degrees, the cutting angle of countersinks for machine screws. These bevel ends are graduated to 64ths inch and have "Readable" numbering, like steel scales. The graduations measure at right angles to the face of the head, which, of course, is parallel with the axis of the drill. Thus the center of drill is directly obtained by reading the graduation, the simplest and most accurate method of centering.

Number		Each
26D	Drill Grinding Gage Complete	$5.20
26E	Drill Grinding Blade Only for No. 26D	2.25

Packing: One in a box.

(No. 26D with addition of Standard Blade and Bevel Blade is No. 26C, listed page T54.)

Separate Parts of Double Squares and Drill Grinding Gage (Pages T54 and T55)

Standard (Graduated) Blade

4 inch (10 cm)	Each	$1.50
6 inch (15 cm)	Each	2.20

Drill Grinding Blade

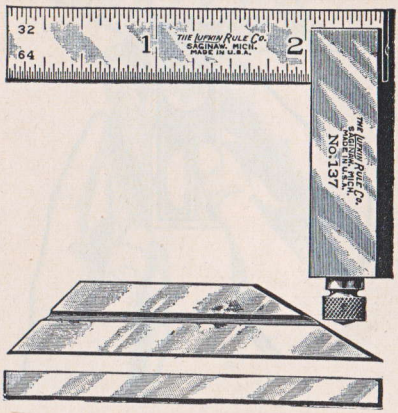
For Head of 6 inch Square	Each	$2.25

Bevel Blade

For 4 inch Square	Each	$0.95
For 6 inch Square	Each	1.10

Head (or Stock) Only

For 4 inch Square	Each	$1.85
For 6 inch Square	Each	2.95



Double Steel Squares

With Hardened and Ground Head and Blades

Designed especially for the small work of tool and die makers. Both faces of head (or stock) are square. All blades slide in head, permitting use in places where a square with fixed blade could not be used. Knurled thumb nut with tension spring serves to securely lock any of the blades.

This square is furnished in various combinations with the following blades:

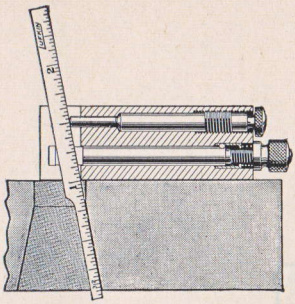
Standard Blade..Graduated one side only, upper edge 32nds, lower edge 64ths inch. 2½ inches long. Approximately ½ inch wide.

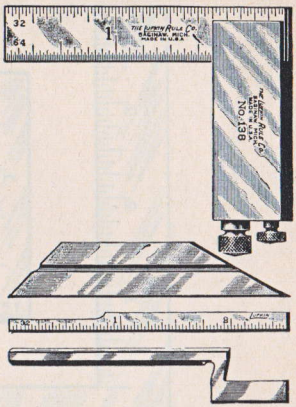
Bevel Blade.....To determine 30 and 45 degree angles. Ungraduated. 2½ inches long. Approximately ½ inch wide.

Narrow Blade...Ungraduated. 2½ inches long. ⅛ inch wide. Very handy for squaring small holes.

Number		Each
137A	Square with Standard Blade	$5.25
137B	Square with Standard and Bevel Blades	5.75
137N	Square with Standard and Narrow Blades	5.75
137C	Square Complete, with Standard, Bevel and Narrow Blades	6.25

Packing: One in a box.





Die Makers Squares

With Hardened and Ground Head and Blades

A tool and die makers Square so designed that the blades not only slide in the head (or stock), but can be adjusted and set at angles with the head. This is particularly valuable in determining clearance in dies (see sectional view).

Both faces of the head are square. It has two knurled thumb screws. The larger will securely clamp blades in position, either straight or at an angle. The smaller is for setting any of the blades at an angle. To set blade at an angle, loosen the thumb screw which clamps blade, then turn the smaller thumb screw into the head. This action, as illustrated, adjusts blade to desired angle, which is then held by tightening the clamping screw.

This square is furnished in various combinations with the following blades:

Standard Blade..... Graduated one side only, upper edge 32nds, lower edge 64ths inch. $2\frac{1}{2}$ inches long. Approximately $\frac{1}{2}$ inch wide.

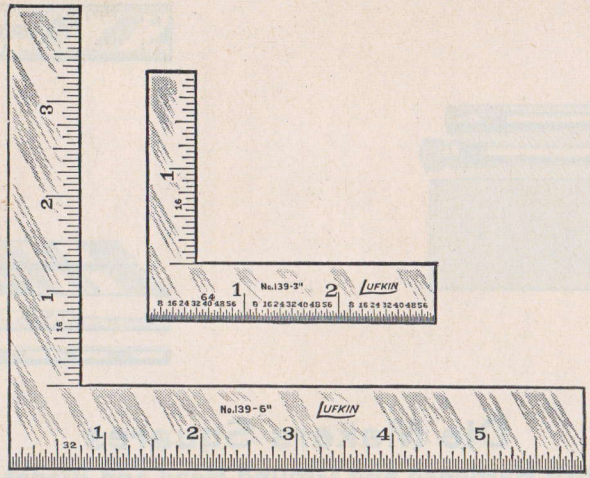
Bevel Blade..... To determine 30 and 45 degree angles. Ungraduated. $2\frac{1}{2}$ inches long. Approximately $\frac{1}{2}$ inch wide.

Narrow Blade..... Graduated one side to 32nds inch. Cut away on one end $\frac{3}{4}$ inch back, making blade size $\frac{3}{32}$ inch by $\frac{1}{16}$ inch, for use in very small places. $2\frac{1}{2}$ inches long. Approximately $\frac{5}{32}$ inch wide.

Offset Blade..... Used in places where it is difficult to sight with the straight blade. The offset end of blade is approximately $\frac{1}{8}$ inch wide and extends from the stock about $1\frac{1}{2}$ inches. Both sides of each edge are beveled, to give a line contact. Ungraduated.

Number		Each
138A	Square with Standard Blade	$6.75
138B	Square with Standard and Bevel Blades	7.30
138N	Square with Standard and Narrow Blades	7.65
138C	Square with Standard, Bevel and Narrow Blades	8.20
138CX	Square Complete, with Standard, Bevel, Narrow and Offset Blades	9.80
138S	Consists of 138CX in fitted case	10.70

Packing: One in a box.



Thin Steel Squares

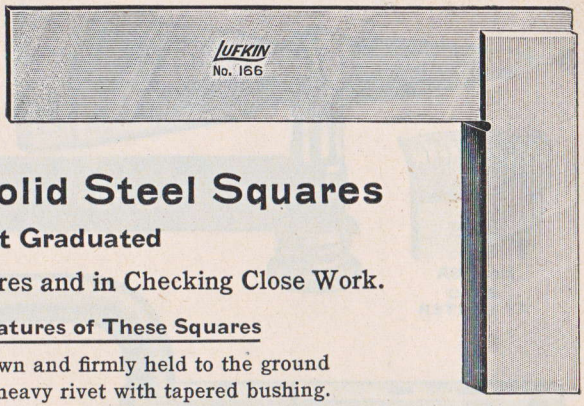
In laying out work these Thin Steel Squares are very handy for draftsmen, pattern and toolmakers, machinists and others. All these Squares are, on both sides, graduated on one inside and one outside edge.

The two and three-inch Squares are graduated 16ths and 64ths inch on one side, 32nds and 64ths on other side, and both these sizes have "Readable" Graduations (64ths numbered every 8th division).

The four and six-inch Squares are marked 16ths and 32nds inch on both sides.

Number Size	Length of Blades	Thickness of Blades	Each
139—2 inch	2″ x 1″	1/20 inch	$4.00
139—3 inch	3″ x 2″	1/20 inch	5.00
139—4 inch	4″ x 3″	1/16 inch	6.50
139—6 inch	6″ x 4″	1/16 inch	7.75

Packing: Three in a box.



Hardened Solid Steel Squares

Not Graduated

Used as Master Squares and in Checking Close Work.

Superior Features of These Squares

Blade positively drawn and firmly held to the ground seat of the base by heavy rivet with tapered bushing. Solid, one-piece beam or base.

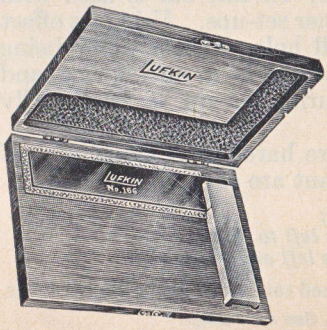
Both the beam and the blade are lapped for accuracy. Clearance for burr or dirt is afforded by groove at the inner corner of the beam. Blade lengths, as given below, are from the inner edge of beam.

Below we offer Wood Cases for protecting these Precision Squares. They are supplied only when specified.

No.	Size (Length Blade)		Length Beam	Each
166	1½ inch	Solid Steel Square	1 9/16 inch	$6.00
166	3 inch	Solid Steel Square	2 9/16 inch	6.75
166	4½ inch	Solid Steel Square	3½ inch	10.50
166	6 inch	Solid Steel Square	4⅜ inch	13.50

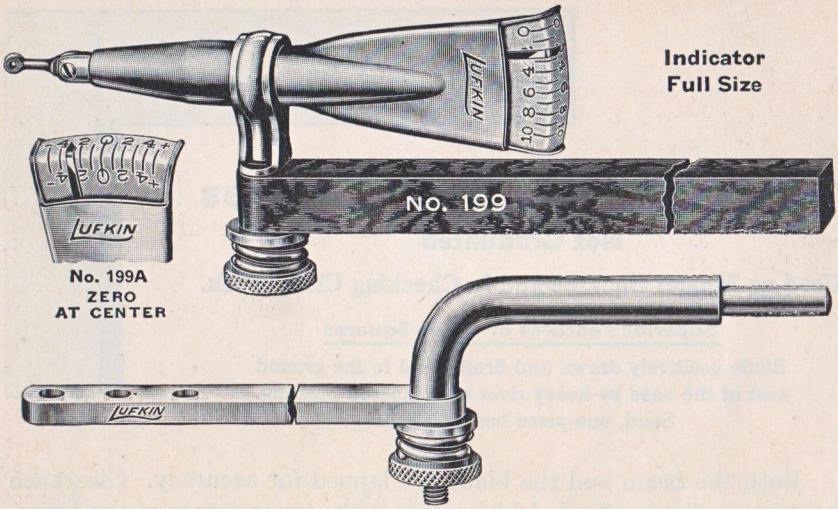
Packing: One in a box.

Wood Box or Case for Above Squares



These Master Squares should have the protection of a fitted case. We here offer such cases or boxes, well built of choice wood, with hinged cover and clasp. They are supplied only when ordered.

Case for 1½ inch Square ..... $3.10 each.
Case for 3 inch Square ..... 3.40 each.
Case for 4½ inch Square ..... 3.75 each.
Case for 6 inch Square ..... 4.50 each.



Indicator
Full Size

No. 199A
ZERO
AT CENTER

Universal Indicator

(Patented)

Rotating Head. Positive Lock. Two Reading Faces.

Can Be Used and Read in Any Practical Position

A valuable exclusive feature of this Indicator is the location of reading faces, one being on the flat side, the other on the end or top. This end marking often makes reading easier and makes possible reading without a mirror in jig boring, milling machine, drill press and similar work. Reading at end is the convenient way when using Indicator with Surface Gage or Vernier Height Gage. In fact it is the most natural and handy way in many kinds of work.

The Indicator, which is one unit, makes a complete revolution on its own center and also on clamping bolt; all locked in position by one thumb nut. The contact point can be set in any position in a half circle and is frictionally held.

As illustrated, a standard bar for general use and a special attachment are furnished with each Indicator. The special attachment is used in Drill Chuck or with Surface Gage. Its flat bar is used with Vernier Height Gage and affords many other set-ups. Using its offset arm, this Indicator will enter a very small hole, contact point being in line with rotating center. Clamping device is a nut, spring and washer, held together as one unit. During set-up it frictionally holds the Indicator in position.

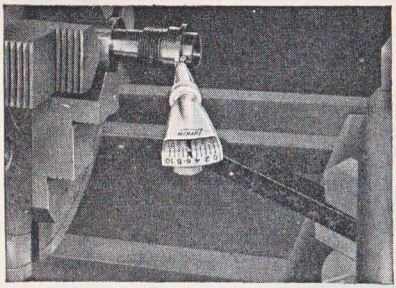
Contact point and all working parts are hardened. Housing is of tough, rust-proof metal; clamp screw and nut are of steel.

Indicator is offered in two types of numbering:
No. 199. . . .Zero at extreme left; Reading left to right.
No. 199A . .Zero at center; Reading to the left and to the right.

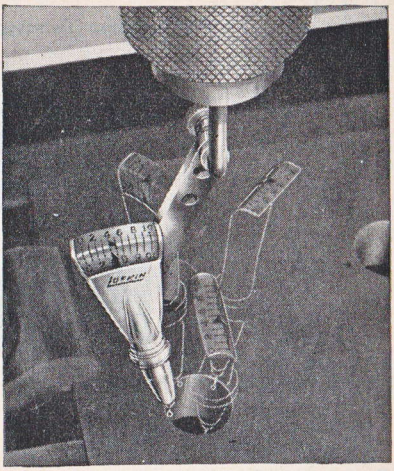
Ideal protection for this fine tool is our plush-lined case with spring-hinged cover.

For Applications and Listings . . . See next page.

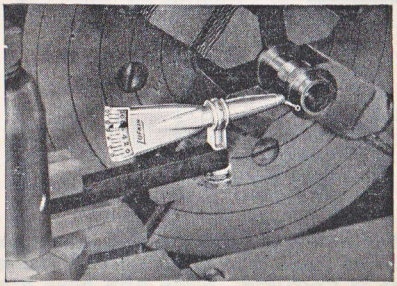
A Few of the Many Uses of This Universal Indicator



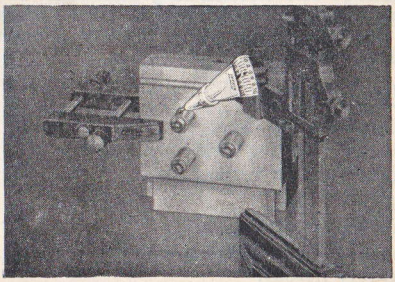
Indicating Flange in Lathe



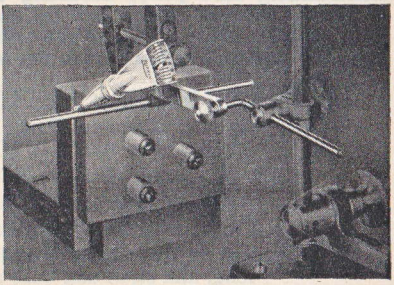
Indicating Hole in Jig Bore, Milling Machine or Drill Press



Indicating Diameter in Lathe



In Use with Height Gage



In Use with Surface Gage

Listings of Universal Indicator

Number	(*For description see page T60*)	Each
199	Indicator. Zero reading at end	$7.50
199A	Indicator. Zero reading at center	7.50
	Plush-lined Case for above. (Supplied only when ordered)	1.25
520K	**Indicator Attachment** (A spindle clamp with 5/16-inch hole for Surface Gage rod.)	1.25

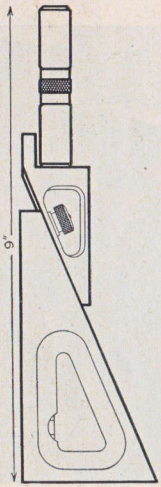
Special Diameter Contact Points, 1/32, 1/16, 1/8 each **$1.35**

Packing: 1 in a Box.

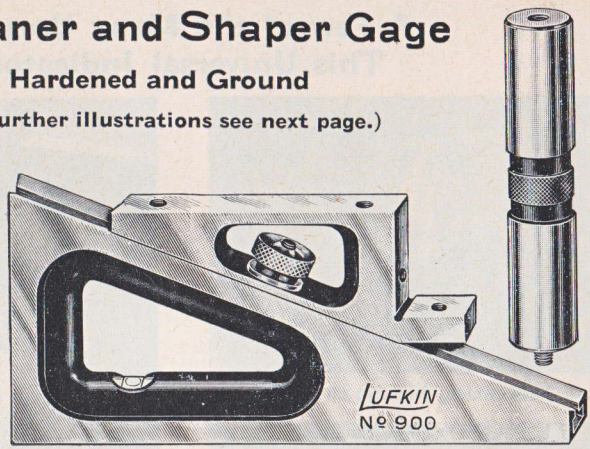
Master Planer and Shaper Gage

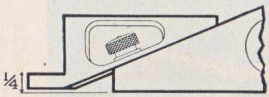
Hardened and Ground

(For further illustrations see next page.)



Position of Parts to Get Maximum Range, 9 inches





Position for Smallest Setting, ¼ inch

This is known as a "Master" Tool because it is designed and precision built, not only to serve better as a Planer Gage, but to properly handle many jobs to which the ordinary gage is unsuited. Slide and base are accurately fitted. Slot in which slide travels is beveled as well as ground, eliminating side play, assuring accuracy. All measuring surfaces are precisely ground. Gage can be used on base, on end, also flat on either side, as both slide and nut are within the outside width of base and both sides are ground square with the working edges.

A few of the many applications of this Master Gage are:

Setting cutting tool on Planer or Shaper; saves time.
(Set Gage to size with Micrometer, Surface Gage or Caliper.)

Used with Gage Blocks in building up work on surface plate.

Used with Sine Bar in grinding angles.

Used with Indicator, for transferring measurements.

Used as an Adjustable Parallel (upper face of slide being extra long, and slide and base accurately fitted).

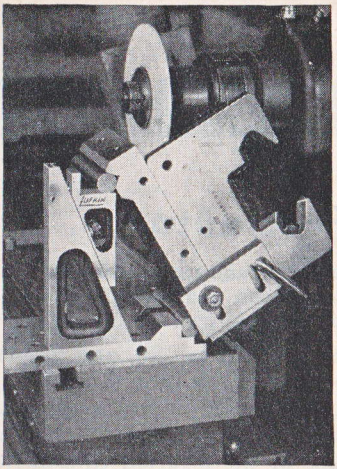
Three-inch extension, regularly supplied with each Gage, makes possible tool settings from ¼ inch to 9 inches; without extension the range is ¼ to 6½ inches. (The one-inch extension, listed as an extra, is handy for adding an even inch.)

Base and slide are of drop forged steel, hardened. Base is ⅝ inch wide, 5⅛ inches long, and fitted with level. Slide has clamp nut securely locking it in position.

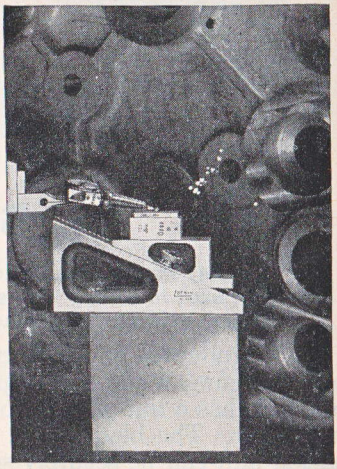
The Genuine Mahogany Case, listed as an extra, is in keeping with this fine tool and the best protection for it.

FOR LISTINGS SEE NEXT PAGE

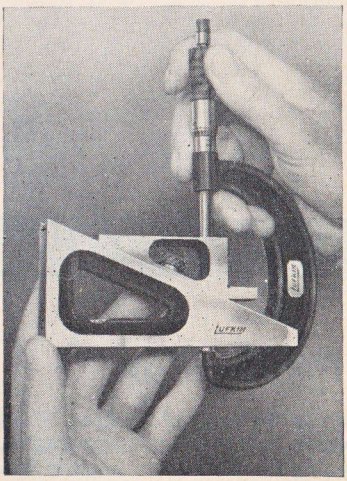
A Few of the Many Uses of No. 900 Master Planer and Shaper Gage



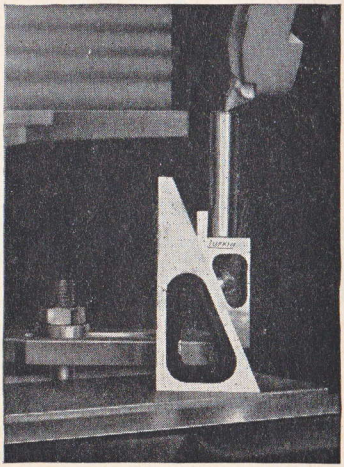
Used in Conjunction with Sine Bar in Grinding Angles



With Gage Blocks for Setting Up Work on a Surface Plate



Gage Being Set to Micrometer Accuracy

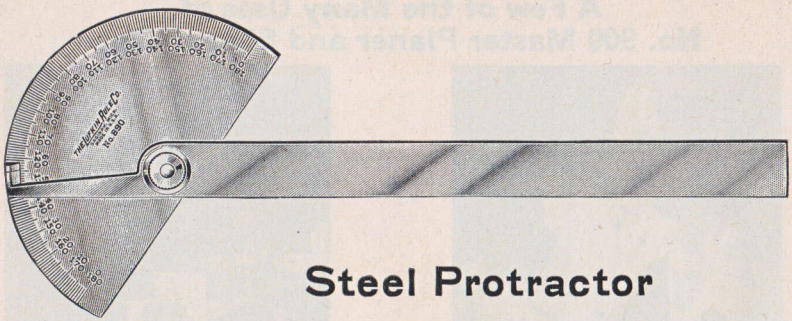


Used to Set Cutting Tool. Note Use of Extension Bar.

Listing of Master Planer and Shaper Gage

Number	(*For Description see page T62*)	Each
900	**Master Planer and Shaper Gage** (including 3-inch extension)	$14.90
	Mahogany Case for above. (Supplied only when ordered).....	1.75
	One-inch Extension for No. 900. (Supplied only when ordered).....	1.25

Packing: One in a box.

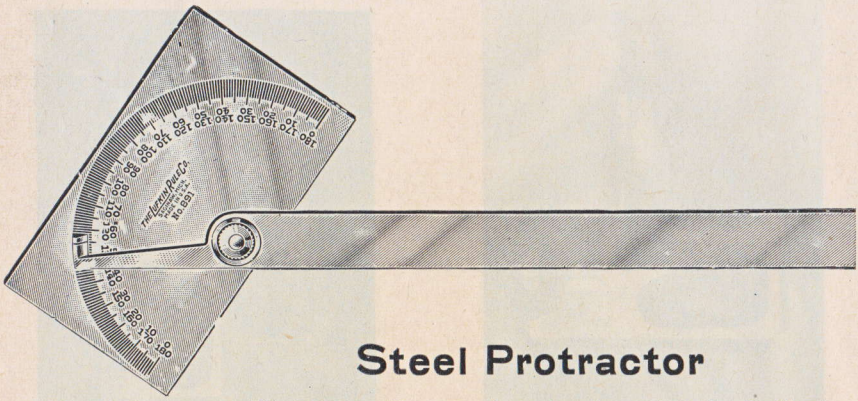


Steel Protractor

A handy Protractor for machinists, draftsmen, and other mechanics; used in setting bevels, transferring angles, and many other classes of work. The head is semi-circular and its back is flat.

It is graduated at the edge in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The indicating arm of the blade has a line graduation for accurately setting and reading the Protractor. The blade is six inches long, has spring giving constant tension and can be securely set by means of the knurled thumb nut.

Number		Each
890	Steel Protractor.....	$4.00



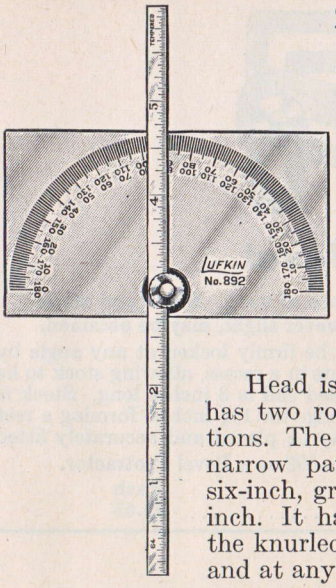
Steel Protractor

A handy Protractor differing from No. 890 only in the shape of the head. Used by machinists, draftsmen and others in setting bevels, transferring angles, etc. Head being rectangular gives four working faces. Back of head is flat.

Head is graduated in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The indicating arm of the blade has a line graduation for accurately setting and reading the Protractor. The blade is six inches long, has spring giving constant tension and can be securely set by means of the knurled thumb nut.

Number		Each
891	Steel Protractor.....	$4.50

Packing Nos. 890 and 891: One in a box.



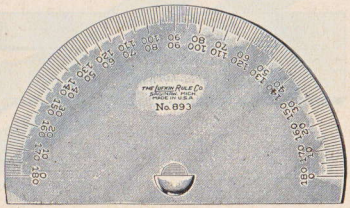
Steel Protractor and Depth Gage

Blade of this Gage, being graduated and sliding in the head of the set nut serves not only as blade and indicating arm for Protractor but also as measuring blade of Depth Gage. Head being rectangular has four working faces. Back of head is flat. This handy tool for machinists, draftsmen and others serves for setting bevels, transferring angles and gaging depths.

Head is graduated in degrees from 0 to 180 and has two rows of figures reading in opposite directions. The blade of this Protractor is our regular, narrow pattern, machine divided scale No. 2310, six-inch, graduated one side 64ths, other side 32nds inch. It has spring affording constant tension, and the knurled thumb nut securely sets it at any angle and at any length extended.

Number		Each
892	**Protractor and Depth Gage**.....	**$4.50**

NOTE: Blade graduated 64ths and 100ths (No. 2311 Rule) furnished with above when specified, without extra charge.



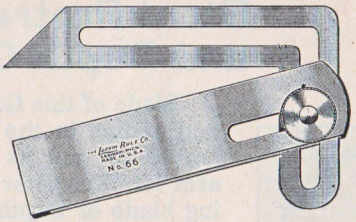
Steel Protractor

Used for setting at any desired angle Bevels such as our Nos. 66 and 67, shown page T66.

Thus used, the tool is converted into a Bevel Protractor. It is graduated at the edge in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The back of the tool is flat.

Number		Each
893	**Steel Protractor**.....	**$3.25**

Packing Nos. 892 and 893: One in a box.



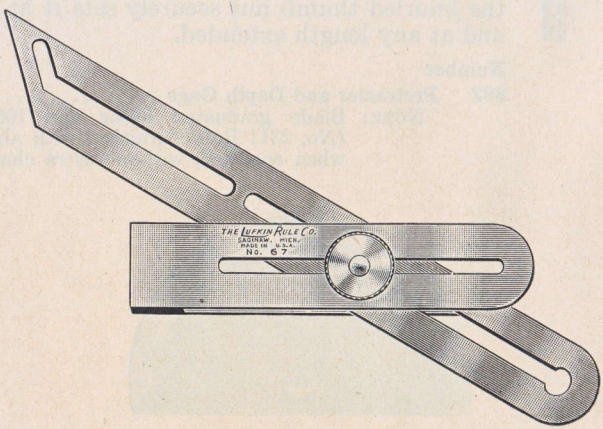
Universal Bevel

A very popular tool, necessary in many classes of work. Blade and stock are so slotted and shaped that any angle, however slight, may be obtained.

Spring gives constant tension and blade can be firmly locked at any angle by the knurled thumb nut. Head of clamping bolt sets in a recess, allowing stock to lie flat on the work. Arm of the blade having beveled end is 3 inches long. Stock is 3 inches long, and, while slotted, is solid on one edge for 1¾ inches, forming a rest under the blade against which even thin work may be placed and accurately fitted

Bevel No. 66 can be used with Protractor No. 893 as a Bevel Protractor.

Number		Each
66	Universal Bevel.....	$3.65



Universal Bevel

This tool, having both straight and offset slots in blade and long slot in stock, will take adjustments and angles which cannot be obtained with many common Bevels.

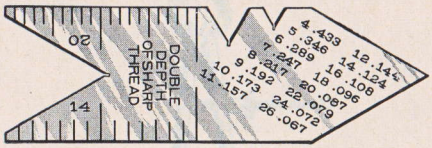
Blade is 6 inches long; stock 3½ inches. Spring affords constant tension and, with knurled thumb nut, blade can be locked in any position. Head of clamp bolt sets in a recess, allowing stock to lie flat on the work.

Bevel No. 67 can be used with Protractor No. 893 as a Bevel Protractor.

Number		Each
67	Universal Bevel.....	$3.75

Packing: One in a box.

NOTE: Steel Protractor No. 893—See page T65.



Center Gages

Center Gages are used in grinding and setting screw cutting tools. The graduations carried are those most commonly required in determining the number of threads per inch or per centimeter. All are of steel, of approximate length 2¼ inches, width 11/16 inch. All except No. 136 are of thickness 1/25 inch.

Numbers **36** and **37** carry table of double depth figures. This is valuable, being used to determine tap drill size for sharp 60 and 55 degree "V" threads. Allowance must be made for the extent to which thread is flattened, it being impractical to tap a perfectly sharp thread.

Number **136** is a heavy Center Gage, (⅛ inch thick), especially suitable for accurately checking heavy threads. It is hardened and ground all over. Its added thickness gives greater contact surface, so alignment can more easily be found, more quickly giving accurate result. This is a sturdy and most practical tool.

Marked 14ths, 20ths, 24ths and 32nds Inch

Number		Each
36	**Center Gage.** Spring tempered. Angles of 60 degrees (U. S., i.e., National S. T. Standard).	$0.80
37	**Whitworth Standard Center Gage.** Spring tempered. Angles of 55 degrees.	.80

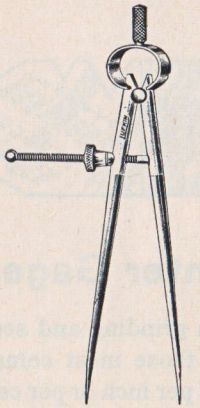
Not Graduated

Number		Each
136	**Heavy Center Gage.** Hardened and Ground. Angles of 60 degrees (U. S., i.e., National S. T. Standard).	$5.25

Marked: Two edges in millimeters, Two edges in ½ millimeters

Number		Each
36M	**Metric Center Gage.** Spring tempered. Angles of 60 degrees.	$0.80

Packing: Six in a box.



Toolmakers Spring Dividers

Round Leg Pattern—The Finest Type

Because of their stability and fine proportions these Round Leg Dividers are preferred by fine mechanics. All torsion on legs and spring is avoided by mounting the adjustment screw central in the legs.

Legs are of round stock, finely formed, tapered by swaging. Parts most subject to wear are hardened. Stiff, flat bow spring insures reliability. All have thumb attachment. All are furnished only with solid nut, are nicely finished and most attractive.

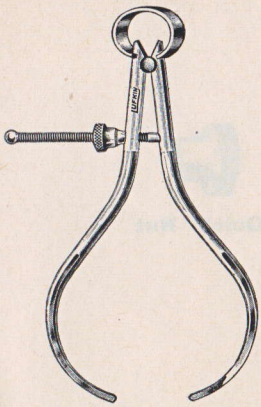
No.	Size		Each
140	**2 inch**	Toolmakers Divider.....	$1.80
140	**3 inch**	Toolmakers Divider.....	2.30
140	**4 inch**	Toolmakers Divider.....	2.75
140	**5 inch**	Toolmakers Divider.....	3.00
140	**6 inch**	Toolmakers Divider.....	3.20

Packing: Two in a box.

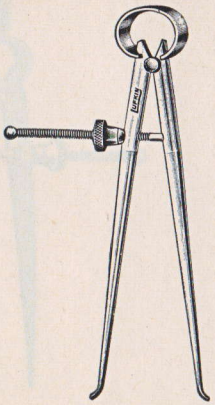
Duplicate Parts of Toolmakers Spring Calipers and Dividers

(When ordering parts be sure to specify size and stock number of Caliper or Divider.)

Part	Each	Part	Each
Screw and Ball	$0.35	Leg (plain).....	$0.60
Spring with Thumb Attachment (for No. 140).....	.75	Leg (bearing Lufkin name)...	.60
Nut with Jam Washer.....	.50	Spring (for Nos. 141 and 142).	.50
Jam Washer.....	.25	Fulcrum Stud.....	.25



Outside Caliper
No. 141



Inside Caliper
No. 142

Toolmakers Outside and Inside Spring Calipers

Round Leg Pattern—The Finest Type

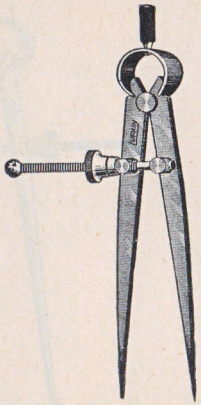
These are the type Calipers preferred by fine mechanics. All torsion on legs and spring is avoided by mounting adjustment screw central in the legs. The round legs are finely proportioned and these Calipers are very stable.

Legs are tapered by swaging. Parts most subject to wear are hardened. Stiff, flat bow spring insures reliability. All are furnished only with solid nut, are nicely finished and most attractive.

No.	Size		Each
141	**2 inch**	Toolmakers Outside Caliper	$1.80
141	**3 inch**	Toolmakers Outside Caliper	2.30
141	**4 inch**	Toolmakers Outside Caliper	2.75
141	**5 inch**	Toolmakers Outside Caliper	3.00
141	**6 inch**	Toolmakers Outside Caliper	3.20

No.	Size		Each
142	**2 inch**	Toolmakers Inside Caliper	$1.80
142	**3 inch**	Toolmakers Inside Caliper	2.30
142	**4 inch**	Toolmakers Inside Caliper	2.75
142	**5 inch**	Toolmakers Inside Caliper	3.00
142	**6 inch**	Toolmakers Inside Caliper	3.20

Packing: Two in a box.



"Quick" Nut

"Banner" Spring Dividers

With Solid Nut **With "Quick" Nut**

Spring Dividers are the kind most widely used. Ours are nicely proportioned and well finished. Stiff, flat bow spring insures reliability. Parts most subject to wear are hardened. All have thumb attachment. All are offered with "Solid" and with "Quick" Nut, mechanics having their preferences.

"Quick" Nut: Designed for quickly making the initial adjustment. Our "Quick" Nut is by far the most satisfactory one. It is of a type entirely different than others and is not spring operated. With it, measurement is not only quickly taken but positively held. On release of pressure this nut slides freely over the threads, yet, on slightest leg pressure it grips the screw firmly.

Lufkin "Quick" Nut is deservedly popular.

"BANNER" SPRING DIVIDERS

With Solid Nut

No.	Size	Each
40—	2½ inch	$1.90
40—	3 inch	2.00
40—	4 inch	2.10
40—	5 inch	2.20
40—	6 inch	2.40
40—	8 inch	2.75
40—10	inch	3.70
40—12	inch	4.15

"BANNER" SPRING DIVIDERS

With "Quick" Nut

No.	Size	Each
50—	2½ inch	$2.25
50—	3 inch	2.35
50—	4 inch	2.45
50—	5 inch	2.55
50—	6 inch	2.75
50—	8 inch	3.10
50—10	inch	4.05
50—12	inch	4.50

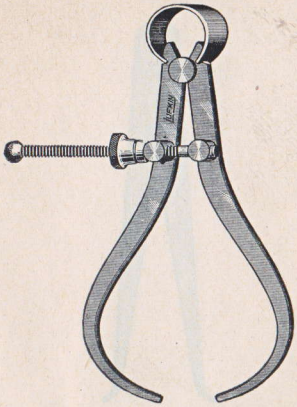
Packing: Three in a box.

Duplicate Parts of "Banner" Spring Calipers and Dividers

(When ordering parts be sure to specify size and stock number of Caliper or Divider)

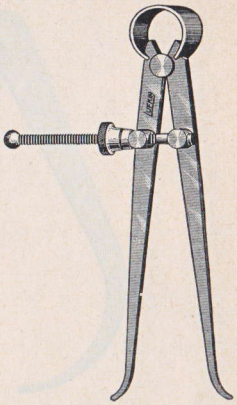
Part	Each
Screw and Ball	$0.40
Spring with Thumb Attachment (for Nos. 40 and 50)	.80
Solid Nut with Jam Washer	.60
"Quick" Nut with Jam Washer	.95
Jam Washer	.30

Part	Each
Leg (plain)	$0.50
Leg (bearing Lufkin name)	.50
Spring (for Nos. 41, 51, 42 and 52)	.55
Fulcrum Stud	.30



Outside Caliper
Nos. 41 and 51

"Quick" Nut



Inside Caliper
Nos. 42 and 52

"Banner" Outside and Inside Spring Calipers

With Solid Nut **With "Quick" Nut**

These are the types of Calipers most widely used. Our Outside and Inside Spring Calipers are nicely proportioned and well finished. Parts most subject to wear are hardened. Stiff, flat bow spring insures reliability. These Calipers are offered with "Solid" and with "Quick" Nut, mechanics having their preferences.

"Quick" Nut: Designed for quickly making the initial adjustment. Our "Quick" Nut is by far the most satisfactory one. It is of a type entirely different than others and is not spring operated. With it, measurement is not only quickly obtained but positively held. On release of pressure this nut slides freely over the threads, yet, on slightest leg pressure it grips the screw firmly. Lufkin "Quick" Nut is deservedly popular.

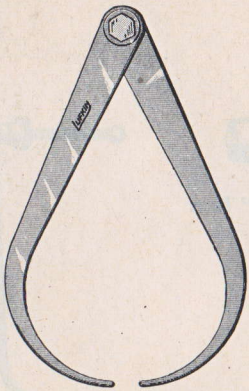
"BANNER" OUTSIDE CALIPERS

With Solid Nut			With "Quick" Nut		
No.	Size	Each	No.	Size	Each
41	2½ inch	$1.90	51	2½ inch	$2.25
41	3 inch	2.00	51	3 inch	2.35
41	4 inch	2.10	51	4 inch	2.45
41	5 inch	2.20	51	5 inch	2.55
41	6 inch	2.40	51	6 inch	2.75
41	8 inch	2.75	51	8 inch	3.10
41	10 inch	3.70	51	10 inch	4.05
41	12 inch	4.15	51	12 inch	4.50

"BANNER" INSIDE CALIPERS

With Solid Nut			With "Quick" Nut		
No.	Size	Each	No.	Size	Each
42	2½ inch	$1.90	52	2½ inch	$2.25
42	3 inch	2.00	52	3 inch	2.35
42	4 inch	2.10	52	4 inch	2.45
42	5 inch	2.20	52	5 inch	2.55
42	6 inch	2.40	52	6 inch	2.75
42	8 inch	2.75	52	8 inch	3.10
42	10 inch	3.70	52	10 inch	4.05
42	12 inch	4.15	52	12 inch	4.50

Packing: Three in a box.



Outside Caliper
No. 11

Inside Caliper
No. 12

Firm Joint Outside and Inside Calipers

Joint with adjustable tension is the distinctive feature of these Firm Joint Calipers. Lock screw construction enables one to set and hold the legs to any desired tension or friction, always operating smoothly.

Firm Joint is the type Caliper that can most quickly be brought to size. These Calipers are of sturdy construction, nicely proportioned and well finished.

All sizes below are length of legs. Actual capacity is about one-quarter greater than this length.

FIRM JOINT OUTSIDE CALIPERS

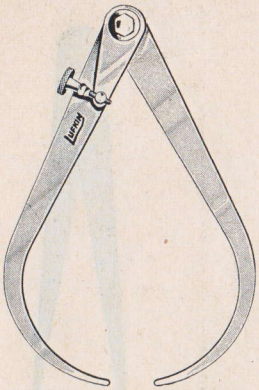
No.	Size	Each
11—	3 inch	$1.20
11—	4 inch	1.20
11—	5 inch	1.20
11—	6 inch	1.20
11—	8 inch	1.50
11—	10 inch	1.80
11—	12 inch	1.80
11—	14 inch	3.85
11—	16 inch	3.85
11—	18 inch	3.85
11—	20 inch	5.35
11—	24 inch	5.35
11—	30 inch	12.00
11—	36 inch	15.00

Packing: 3 to 6 inch .....6 in a box
8 to 12 inch.....3 in a box

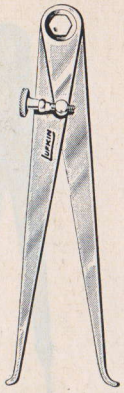
FIRM JOINT INSIDE CALIPERS

No.	Size	Each
12—	3 inch	$1.20
12—	4 inch	1.20
12—	5 inch	1.20
12—	6 inch	1.20
12—	8 inch	1.50
12—	10 inch	1.80
12—	12 inch	1.80
12—	14 inch	3.85
12—	16 inch	3.85
12—	18 inch	3.85
12—	20 inch	5.35
12—	24 inch	5.35

14 to 18 inch.....2 in a box
20 inch and over....1 in a package



Outside Caliper
No. 21



Inside Caliper
No. 22

Screw Adjusting Firm Joint Calipers

More quickly brought down to the work than are Spring Calipers, these yet have, over other Firm Joint Calipers, the advantage of screw to get the fine setting. Head construction is such that legs can be set and held to any desired tension or friction, and smooth operation is maintained.

They are sturdy, nicely proportioned and well finished. All sizes below are length of legs. Actual capacity is about one-quarter greater than this length.

OUTSIDE CALIPERS

Screw Adjusting—Firm Joint

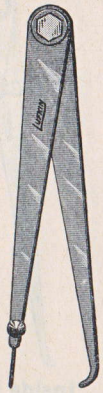
No.	Size	Each
21—	4 inch	$2.20
21—	6 inch	2.20
21—	8 inch	2.75
21—	10 inch	3.40
21—	12 inch	3.40
21—	14 inch	5.35
21—	16 inch	5.35
21—	18 inch	5.35
21—	20 inch	6.80
21—	24 inch	6.80

INSIDE CALIPERS

Screw Adjusting—Firm Joint

No.	Size	Each
22—	4 inch	$2.20
22—	6 inch	2.20
22—	8 inch	2.75
22—	10 inch	3.40
22—	12 inch	3.40
22—	14 inch	5.35
22—	16 inch	5.35
22—	18 inch	5.35
22—	20 inch	6.80
22—	24 inch	6.80

Packing: 4 to 12 inch.....3 in a box
14 to 18 inch.....2 in a box
20, 24 inch.....1 in a package



No. A-17

No. 17

Firm Joint Hermaphrodite Calipers

Laying out work, locating centers, etc., are the principal uses of these. Joint with adjustable tension is a distinctive feature. Having lock screw construction, legs can be set and held to any desired tension or friction.

These Calipers are sturdy, smooth-working, nicely proportioned and well finished.

All sizes below are length of legs. Actual capacity is about one-quarter greater than this length.

Number A-17 has adjustable point.

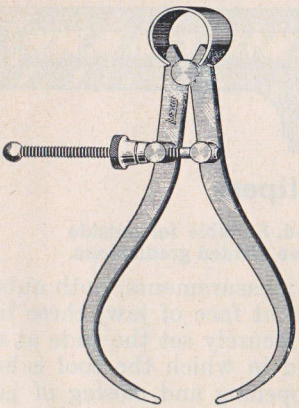
FIRM JOINT HERMAPHRODITE CALIPERS
With Adjustable Point

No.	Size	Each
A-17	**4-inch**	$1.25
A-17	**6-inch**	1.50
A-17	**8-inch**	1.80

FIRM JOINT HERMAPHRODITE CALIPERS

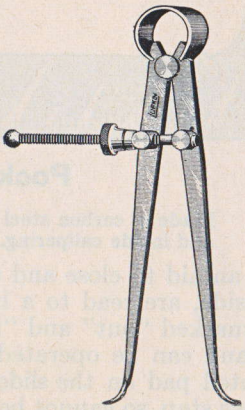
No.	Size	Each
17	**4-inch**	$0.90
17	**6-inch**	1.20
17	**8-inch**	1.50

Packing: Three in a box.



Outside Thread Caliper
Nos. 44 & 54

"Quick Nut"



Inside Thread Caliper
Nos. 45 & 55

Thread Calipers

With Solid Nut. **With "Quick" Nut.**

Spring Calipers designed for taking measurements of outside and inside screw threads. Points are suitably shaped to work in threads; otherwise these Calipers are same as our general purpose "Banner" Line. Parts most subject to wear are hardened. Stiff, flat bow spring insures reliability. They are nicely proportioned and well finished. They are offered with "Solid" and "Quick" Nut, mechanics having their preferences.

"Quick" Nut: Designed for quickly making the initial adjustment. Our "Quick" Nut is by far the most satisfactory one. It is of a type entirely different than others and is not spring operated. With it, measurement is not only quickly obtained but positively held. On release of pressure this nut slides freely over the threads, yet, on slightest leg pressure it grips the screw firmly.

Lufkin "Quick" Nut is deservedly popular.

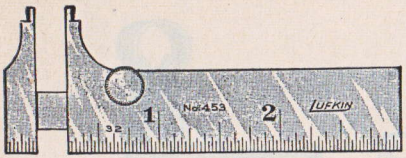
Outside Thread Calipers

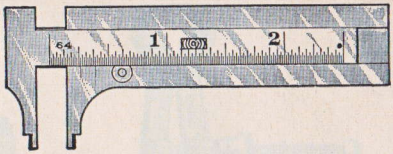
With Solid Nut		With "Quick" Nut	
No. Size	Each	No. Size	Each
44-4 inch Outside Thread Caliper	$2.30	**54-4 inch** Outside Thread Caliper	$2.65
44-5 inch Outside Thread Caliper	2.40	**54-5 inch** Outside Thread Caliper	2.75
44-6 inch Outside Thread Caliper	2.60	**54-6 inch** Outside Thread Caliper	2.95

Inside Thread Calipers

With Solid Nut		With "Quick" Nut	
No. Size	Each	No. Size	Each
45-4 inch Inside Thread Caliper..	$2.30	**55-4 inch** Inside Thread Caliper..	$2.65
45-5 inch Inside Thread Caliper..	2.40	**55-5 inch** Inside Thread Caliper..	2.75
45-6 inch Inside Thread Caliper..	2.60	**55-6 inch** Inside Thread Caliper..	2.95

Packing: Three in a box.





Pocket Slide Calipers

Made of carbon steel and finely finished. Suitable for outside and inside calipering. Accurate, machine divided graduations.

As an aid to close and quick reading, measurements, both outside and inside, are read to a line rather than at face of jaw, these lines being marked "out" and "in." Lock will securely set the slide at any point and can be operated by same hand in which the tool is held. A serrated pad on the slide affords easy opening and closing of jaws. Slide has stop, so cannot be entirely withdrawn or lost out.

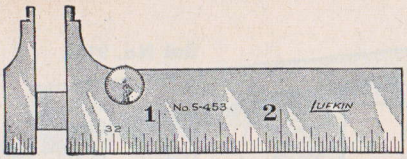
	On 3-inch and 7 cm.	On 5 & 6-inch & 12 cm.
Depth of jaws	11/16 inch (17 mm.)	1 7/16 inch (36 mm.)
Width of nibs, closed	1/8 inch (3 mm.)	1/4 inch (6 mm.)

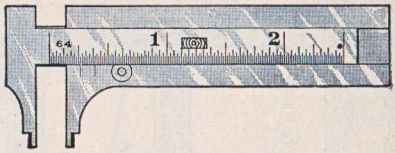
Number		Each
	Marked English Only.	
453	3-inch. **Pocket Slide Caliper.** Calipering capacities: Outside 2 1/8, inside 2 1/4 inches. Graduation: Slide 64ths inch. Stock 32nds inch.	$6.40
455	5-inch. **Pocket Slide Caliper.** Calipering capacities: Outside 3 13/16, inside 4 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.	7.80
456	6-inch. **Pocket Slide Caliper.** Calipering capacities: Outside 4 3/4, inside 5 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.	11.00
	Marked Metric Only.	
453M	7-centimeter. **Pocket Slide Caliper.** Calipering capacities: Outside 54, inside 57 millimeters. Graduation: Slide ½ millimeters. Stock millimeters.	$6.40
455M	12-centimeter. **Pocket Slide Caliper.** Calipering capacities: Outside 97, inside 103 millimeters. Graduation: Slide ½ millimeters. Stock millimeters.	7.80
	Marked English and Metric.	
453EM	3-inch (7 cm.). **Pocket Slide Caliper.** Graduation: Slide, one edge 64ths inch, one edge ½ mm. Stock 32nds inch.	$6.40
455EM	5-inch (12 cm.). **Pocket Slide Caliper.** Graduation: Slide, one edge 64ths inch, one edge ½ mm. Stock 32nds inch.	7.80

Soft Leather Cases for Pocket Slide Calipers.

3-inch size....$0.60 5-inch size....$0.80 6-inch size..$1.00 each

Packing: One in a box.





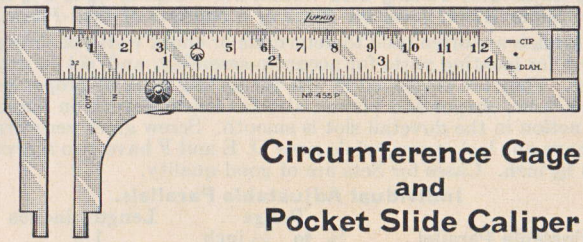
Stainless Steel Pocket Slide Calipers
Rust-Proof

Of high grade Genuine Stainless Steel, hence rust and stain-proof, a very desirable feature in some localities, almost indispensable in certain kinds of work. These have accurate, machine divided graduations and are finely finished.

Like our other Pocket Slide Calipers these are suitable for outside and inside calipering and, for both, read to "out" and "in" lines rather than at face of jaw. Lock will securely set the slide at any point. A serrated pad on the slide affords easy opening and closing of jaws. Slide has stop, so cannot be entirely withdrawn or lost out.

Depth of jaws.....	On S-453....$1\frac{1}{16}$ inch.	On S-455....$1\frac{7}{16}$ inch.
Width of nibs, closed..	On S-453....$\frac{1}{8}$ inch.	On S-455....$\frac{1}{4}$ inch.

Number			Each
S-453	3-inch.	**Stainless Steel Pocket Slide Caliper**..... Calipering capacities: Outside $2\frac{1}{8}$, inside $2\frac{1}{4}$ inches. Graduation: Slide 64ths inch. Stock 32nds inch.	$10.75
S-455	5-inch.	**Stainless Steel Pocket Slide Caliper**..... Calipering capacities: Outside $3\frac{13}{16}$, inside 4 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.	12.40
S-456	6-inch.	**Stainless Steel Pocket Slide Caliper**..... Calipering capacities: Outside $4\frac{3}{4}$, inside 5 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch	15.00

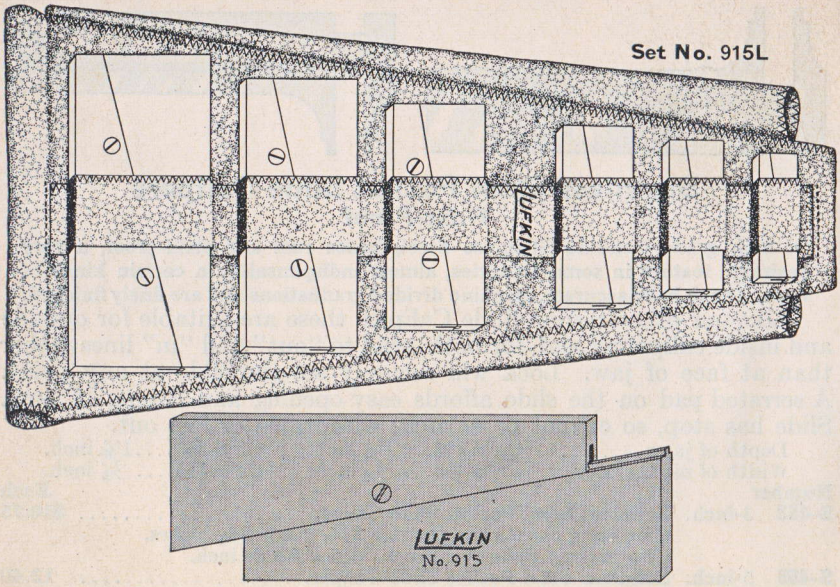


Circumference Gage and Pocket Slide Caliper

A regulation pattern carbon steel Pocket Slide Caliper but with circumference inches to 16ths on upper edge of slide, in addition to standard inches to 32nds on its lower edge. Stock graduated 5 inches to 32nds. Machine divided. Nicely finished.

Applied to diameters, outside or inside, circumference as well as diameter can be read directly. All measurements are read to a line rather than at face of jaw, an aid to close and quick reading. Lines are clearly marked "out" and "in." Will caliper up to $2\frac{3}{4}$ inch diameter, as jaws are $1\frac{7}{16}$ inch deep. Width of nibs when closed, $\frac{1}{4}$ inch. Caliper has convenient lock, also slide stop.

Number			Each
455P	5-inch.	**Circumference Gage and Pocket Slide Caliper**..... Calipering capacities: Outside $3\frac{13}{16}$, inside 4 inches of diameter.	$7.80



Adjustable Parallels

Readily Adjusted To and Locked To Micrometer Measurement, These Parallels Have Many Applications In Use In Layout, Gaging, Spacing and Checking Work as Done by Toolmakers and Mechanics.

Offered Individually, Also In Sets In Red Fitted Case.

Being Adjustable To Any Size Within the Range of 3/8 to 2 1/4 Inches, These, in Some Work, Take the Place of a Number of One-Piece Parallels.

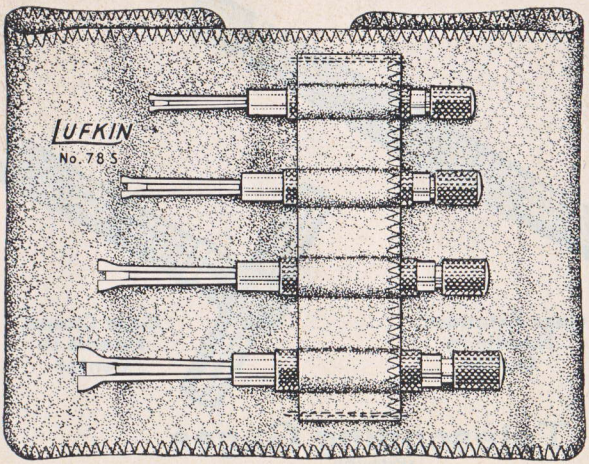
These Parallels are often used to determine or check width of slots and openings, also as spacers for locating parts for accurate assembly, and, set to determined size, serve as gages. They are employed in vise for setting work at proper height or angle for milling machine, shaper and planer, also for leveling work on planer, drill press, etc. Sliding action in the dovetail slot is smooth. Screw gives very firm lock. Sizes A, B and C have one lock screw, while sizes D, E and F have two screws. Thickness of all sizes is 9/32 inch. Cases for Sets are of good quality.

Individual Adjustable Parallels.

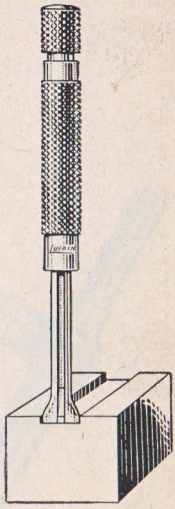
No.		Range	Length, inches	Price, each
915A	Adjustable Parallel	3/8 to 1/2 inch	1 3/4	$1.50
915B	Adjustable Parallel	1/2 to 11/16 inch	2 1/8	1.70
915C	Adjustable Parallel	11/16 to 15/16 inch	2 11/16	1.90
915D	Adjustable Parallel	15/16 to 1 5/16 inches	3 9/16	2.40
915E	Adjustable Parallel	1 5/16 to 1 3/4 inches	4 3/16	2.90
915F	Adjustable Parallel	1 3/4 to 2 1/4 inches	5 1/16	3.40

Set No.	Sets of Adjustable Parallels.	Price of Set
915L	**Complete Set. Six Parallels. Range: 3/8 to 2 1/4 inches . . In Red Fitted Case, as illustrated.** Includes one each Nos. 915A, B, C, D, E and F.	$15.60
915M	**Small Set. Four Parallels. Range: 3/8 to 1 5/16 inches . . . . . In Red Fitted Case.** Includes one each Nos. 915A, B, C and D.	8.90

Packing: One Parallel or one Set in a Box.



Complete Set No. 78S
Range 1/8 to 1/2 Inch



Design permits gaging shallow holes or grooves

Small Hole Gages

All Lufkin Small Hole Gages have the ball end flattened off close to the center line which permits gaging holes and shallow recesses.

These small hole gages are ideal for measuring the diameter of a small hole or the width of a slot or groove that is below the 5/16 inch range of Lufkin Telescoping Gages No. 79AA.

The size of the ball end is adjusted by turning the knurled knob at the opposite end of the gage, and the change in the size of the ball end is almost proportional to the movement of the knob, which greatly aids in getting the proper "feel" and setting. In addition, the radius of the ball end is always less than that of the hole being measured, thereby making only a two-point contact.

To operate, simply insert the ball end of the proper size gage in the hole or groove, turn the knurled knob until the right "feel" is obtained and then measure ball end with a micrometer.

Lufkin Small Hole Gages are made of special analysis steel with hardened ball ends. Provision is also made whereby travel of the expanding cone is stopped at both the extreme open and closed limits of the gage preventing breakage. Size of handles are in proportion to the size of gage affording proper balance essential to accurate measurements.

Small Hole Gages are available in four sizes as listed below, also as a complete set put up in an attractive and durable red fitted case.

Individual Small Hole Gages

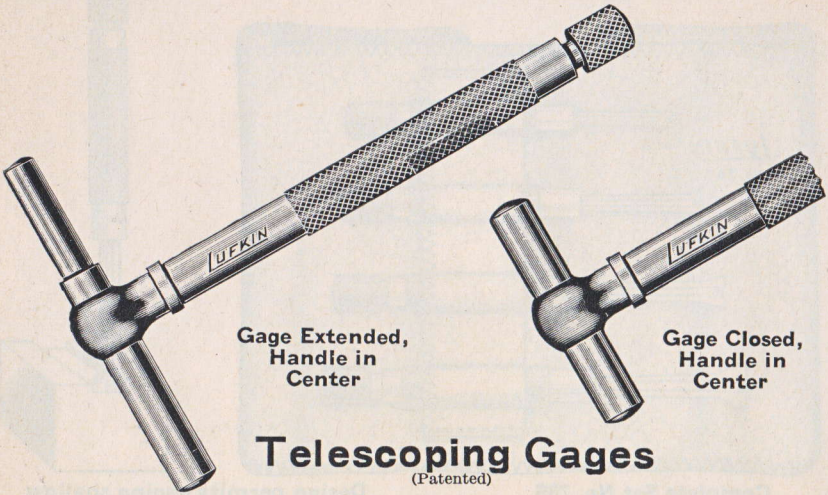
No.	Length	Range	Price, Each
78A	2 13/16 inch	1/8" to 3/16" (.125"—.187") dia.,	$2.70
78B	3 1/8 inch	3/16" to 1/4" (.187"—.250") dia.,	2.80
78C	3 3/8 inch	1/4" to 3/8" (.250"—.375") dia.,	2.90
78D	3 9/16 inch	3/8" to 1/2" (.375"—.500") dia.,	3.00

Sets of Small Hole Gages

Set No.

78S Complete set. Four Gages. Range 1/8 to 1/2 inch, in Red Fitted case as illustrated above **$12.60**

Packing: One Gage in a box, four in a carton—Set No. 78S, One in a box.



Gage Extended, Handle in Center

Gage Closed, Handle in Center

Telescoping Gages

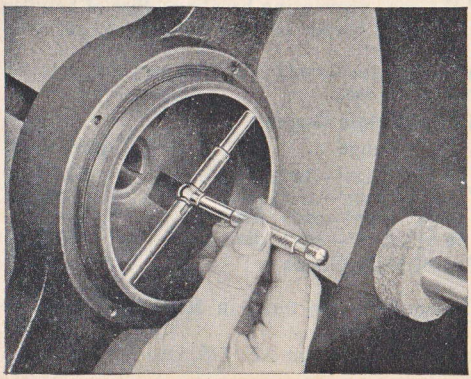
(Patented)

Our Telescoping Gages, unlike others, have handle which can always be locked at the center of the plungers. This retains that perfect balance and feel so essential to accuracy. See illustration below.

Using a Telescoping Gage the inside size of slots or holes is quickly and accurately obtained. The measurement, down to one thousandth inch or less, is then taken from the Gage with a Micrometer.

Our Telescoping Gages consist of a handle and two plungers, one telescoping into the other, and both under constant spring tension. Plungers can be locked by slight turn of the knurled screw in the end of the handle. The ends of the plungers are hardened and ground to a radius, giving clearance in the smallest opening the Gage will enter.

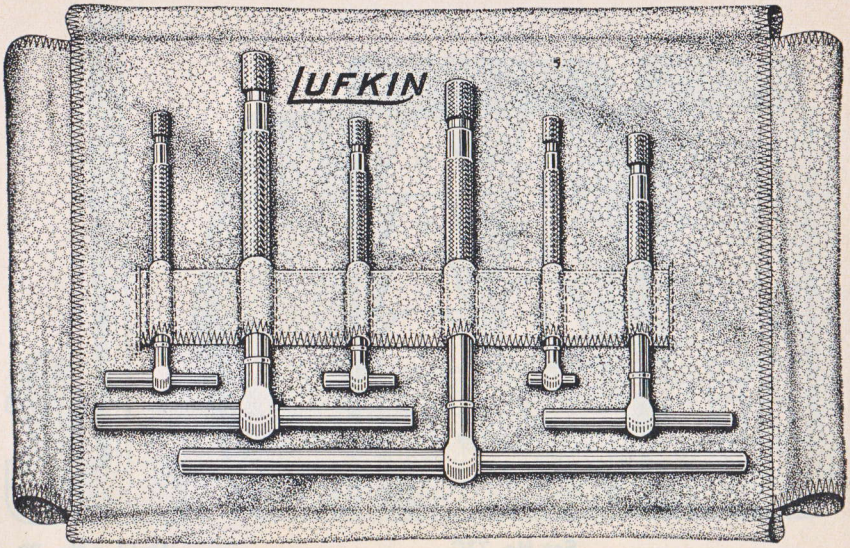
With the plungers telescoping into each other and the handle adjustable as to position on the extended tool, there is no measurement within the capacity of the tool that cannot be taken with our Telescoping Gage.



Picturing One Valuable and Exclusive Feature of LUFKIN Telescoping Gages

Note the position of handle in gaging this blanking die. Even though Gage is not fully extended, its handle is at center of the tool. Thus perfect balance and feel is always retained, quickly giving accurate size.

FURTHER DESCRIPTION AND LISTINGS—SEE NEXT PAGE



Complete Set No. 79L Range: 5/16 to 6 Inches

Telescoping Gages (Continued)

Our Telescoping Gages are made in six sizes. The smallest will enter a 5/16-inch hole; the largest expands to 6 inches. Five-sixteenths inch is a smaller opening than can be measured by any other Gage of this type.

Method of Use

Compress plungers, then lock them by turning screw in handle. Insert Gage into hole, then release lock. (The plungers will expand themselves to exact size of hole or slot.) Then lock plungers, remove the Gage, and measure it with a Micrometer.

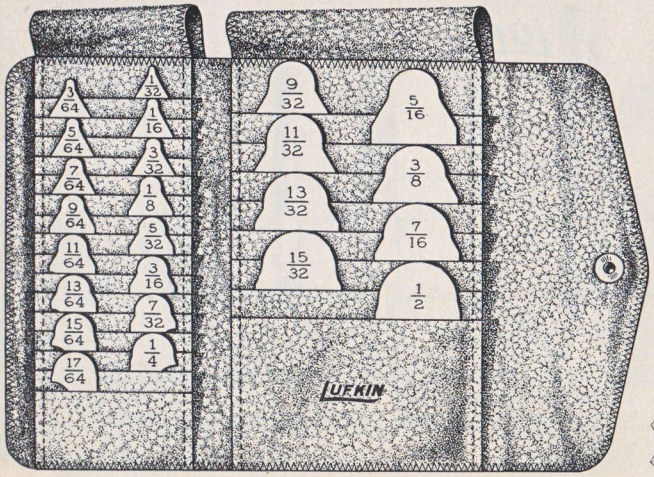
Individual Telescoping Gages

Gage Number			Price, Each
79AA	Telescoping Gage.	Range: 5/16 to 1/2 inch.....	$2.75
79A	Telescoping Gage.	Range: 1/2 to 3/4 inch.....	2.75
79B	Telescoping Gage.	Range: 3/4 to 1 1/4 inches.....	3.20
79C	Telescoping Gage.	Range: 1 1/4 to 2 1/8 inches.....	3.60
79D	Telescoping Gage.	Range: 2 1/8 to 3 1/2 inches.....	4.50
79E	Telescoping Gage.	Range: 3 1/2 to 6 inches.....	5.50

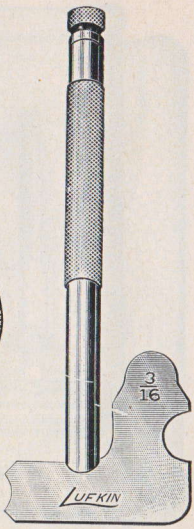
Sets of Telescoping Gages

Set Number		Price of Set
79L	Complete Set. Six Gages. Range: 5/16 to 6 inches..... Includes one each Nos. 79AA, 79A, 79B, 79C, 79D, 79E. in Red Fitted Case, as illustrated above.	$24.10
79M	Small Set. Four Gages. Range: 5/16 to 2 1/8 inches..... Includes one each Nos. 79AA, 79A, 79B, 79C. in Red Fitted Case.	13.50

10-inch Long Handle for Any of Above Gages.....Each $4.75
(Always specify stock number of Gage with which Handle is to be used.)
Gage No. **79X** with 10-inch Handle. Range 2 7/16 to 4 3/32 inch. Price Each $7.50
Packing: One Gage or Set in a box.



Set No. 77C



Holder No. 20

Radius Gages

(Patented)

But a few of the many applications of Radius Gages (otherwise known as Fillet Gages) are shown on next page. Such Gages are used by tool and diemakers, pattern makers, templet layout men, screw machine operators and other mechanics.

The following outstanding features are found only in our Radius Gages:

Each blade (or gage) is a separate unit; thus each one can be most conveniently and accurately applied to the work.
Each blade carries the corresponding external and internal forms, the practical combination.
All edges are accurate and smooth.

In our Radius Gages, each of the steel blades or gages is prominently marked with its radius, and all the gages comprised in a Set are put up in an attractive and durable Red Fitted folder. This folder insures proper protection for all and makes most simple and easy the selection of the individual gage wanted.

We Offer Radius Gages in 5 Different Sets, Their Contents as Follows:

(77A) 16 Gages....Radii from 1/32 to 17/64 inch by 64ths.
(77B) 8 Gages....Radii from 9/32 to 1/2 inch by 32nds.
(77C) 24 Gages....Sets 77A and 77B combined.
(77D) 16 Gages....Radii from 1/32 to 1/2 inch by 32nds.
(77E) 8 Gages....Radii from 9/16 to 1 inch by 16ths.

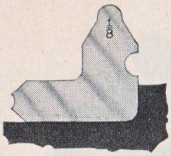
Radius Gage Holder

Not regularly furnished with Sets. If wanted order as "No. 20 Holder."

Especially well suited to its work. Four inches long and enables one to gage nicely even in small and out-of-the-way places. Blade placed in either 30 or 45 degree slot of Holder. It is then securely held, not only at either of these angles, but also when sharply cocked to either side. Knurled nut at other end of Holder rigidly clamps the blade or gage.

FOR LISTINGS SEE NEXT PAGE

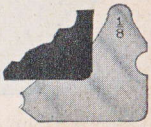
A Few of the Many Uses of LUFKIN Radius Gages



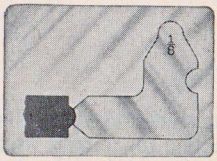
1

View No. 1: Shows gage used to determine the radius of inside corners or fillets for one-fourth or less of a circle. Straight sides of gage are at 90 degrees and can be used for checking location of radius.

View No. 2: Shows gage used to determine the radius of outside corners. Also shows whether sides are at 90 degrees and tangent to circle.



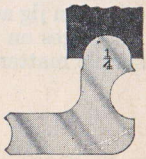
2



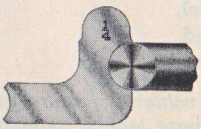
3

View No. 3: Shows work being checked on a piece of glass. Also checks any other convex parts, where radius is one-fourth or more of circle, that have projections which will not permit the use of gage as in Views 2 and 5.

View No. 4: Shows use of gage on concave cutter of one-half or less of circle. This gage can be used to check the radius shown in View No. 1, but will not show the relation of radius to sides.



4



5

View No. 5: Checks one-half of a circumference.

Listings of Radius Gages and Holder

(*Descriptions on page 82*)

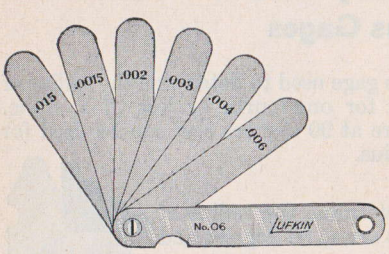
Each Set Complete With Red Fitted Folder

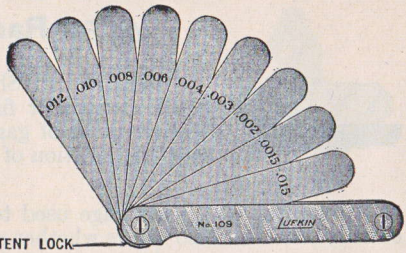
Set No.		Price per Set
77A	Radius Gage Set. 16 gages. Radii from 1/32 to 17/64 inch by 64ths.	$5.90
77B	Radius Gage Set. 8 gages. Radii from 9/32 to 1/2 inch by 32nds..	4.20
77C	Radius Gage Set. 24 gages. (Consists of Sets 77A and 77B combined.) Radii from 1/32 to 17/64 inch by 64ths, and 9/32 to 1/2 inch by 32nds.	9.70
77D	Radius Gage Set. 16 Gages. Radii from 1/32 to 1/2 inch by 32nds...	7.20
77E	Radius Gage Set. 8 gages. Radii from 9/16 to 1 inch by 16ths	40.00
	No. 20 Holder Only for all above Radius Gages.....	1.15 each
1/64th Inch Radius Gage Blade	(Blade for this radius being available, it is here listed separately, because this size is not included in any of the Sets listed above.)	1.20 each

Extra Blades (or Gages) for Above Sets

From 1/32 to 17/64 inch..... $0.60 each
From 9/32 to 1/2 inch..... .70 each
From 9/16 to 1 inch, i.e. the following large sizes:
9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16 and 1 inch..... 5.00 each

Packing: One set in a box.





Thickness Gages

All with Patent Lock (except No. 06)

Thickness Gages, also called Feeler Gages, are extensively used in the manufacture and servicing of automobiles, also by toolmakers, machinists and others in jig and fixture work, in the making of gages, in experimental work, etc. All Gages on this page have case into which the leaves fold and, on all, it is a simple matter to insert a new leaf.

All Gages below have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness.

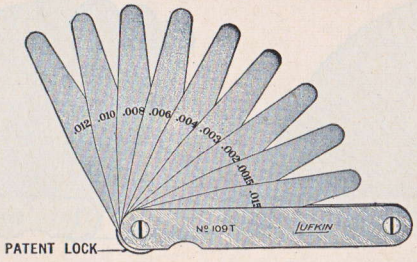
Gages 109, 109M and 116M have the very handy and valuable feature of Patent Lock. This will firmly lock in any position any one or more leaves, making insertion in any opening simple. It also greatly reduces the chances of error. It facilitates use of Gage in its overall length, which, with leaf extended, is six inches. Another use, it locks all leaves in the case. It is operated by same hand that holds the tool.

No. 06 is our lowest priced Gage, yet a good, reliable tool. It is extensively used by garage mechanics, car owners, truck and tractor operators in determining clearance of tappets, fitting pistons and adjusting spark gap. One end of its case has eyelet for key-ring or hanging up.

All With Leaves 3 Inches Long, ½ Inch Wide

Number		Each
06	**6-Leaf Thickness Gage.** Thicknesses: .0015, .002, .003, .004, .006, .015 inch.	$1.50
109	**9-Leaf Thickness Gage. With Lock.** Thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, .015 inch.	2.50
109M	**9-Leaf Metric Thickness Gage. With Lock** Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25 millimeters. Combined thickness 1 mm. Leaves approximately 12 mm. wide, 7½ cm. long.	2.50
116M	**16-Leaf Metric Thickness Gage. With Lock** Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25, .30, .35, .40, .45, .50 millimeters and two leaves of 1 mm. each. Combined thickness 5 mm. Leaves approximately 12 mm. wide, 7½ cm. long.	4.00

Packing: No. 06, Six in a box. All others—One in a box, three in a carton.



Thickness Gages with Tapered Leaves

With Patent Lock

These Thickness Gages are especially popular because they will enter narrower openings, the leaves being tapered to 1/4 inch width. Otherwise they are identical with Gages of similar numbers shown page T84.

Each of these Gages has case into which the leaves fold. On all, the inserting of a new leaf is very simple. Leaves are of the popular length, three inches.

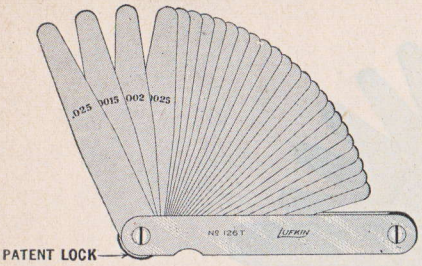
All Gages below have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness.

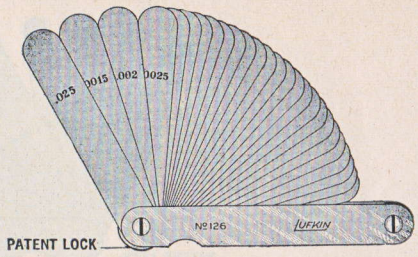
All these Gages have Patent Lock, a most valuable and handy feature. This will firmly lock in any position any one or more leaves, making insertion in any opening simple. It also greatly reduces the chances of error. It facilitates use of Gage in its overall length, which, with leaf extended, is six inches. Another use, it locks all leaves in case. It is operated by same hand that holds the tool.

All with Leaves 3 Inches Long, Tapered to 1/4 Inch Wide

Number		Each
109T	**9-Leaf Thickness Gage.** With tapered leaves ..... Thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, .015 inch.	$2.50
110T	**10-Leaf Thickness Gage.** With tapered leaves ..... Thicknesses: .0015, .002, .0025, .003, .004, .006, .008, .010, .012, .015 inch. (Same as No. 109T but having in addition leaf .0025).	2.80
109TM	**9-Leaf Metric Thickness Gage.** With tapered leaves ..... Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25 millimeters. Combined thickness 1 mm. Leaves approximately 7½ cm. long, tapered to 6½ mm.	2.50

Packing: One in a box, three in a carton.





Thickness Gages

With Patent Lock

With Tapered Leaves. **With Straight Leaves.**

A feature of all the Gages below is the great range of thicknesses they cover: No. 126T offering 26 thicknesses and also having all leaves tapered to ¼ inch width, giving access to narrower openings, will handle practically any work required of a Thickness Gage.

Each of these Gages has case into which leaves fold and, on all, new leaves can very readily be inserted. Leaves of Nos. 122 and 126 are ½ inch wide and not tapered; those on No. 126T are tapered. In the 22-leaf Gage the leaf thicknesses run by thousandths from .004 to 025 inch inclusive; in the 26-leaf, by thousandths from .002 to .025 and include also .0015 and .0025 inch.

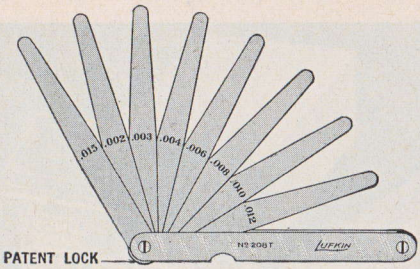
All Gages below have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness.

All these Gages have Patent Lock, a most valuable and handy feature. This will firmly lock in any position any one or more leaves, making insertion in any opening simple. It also greatly reduces the chances of error. It facilitates use of Gage in its overall length, which, with leaf extended, is six inches. Another use, it locks all leaves in case. It is operated by same hand that holds the tool.

All with Leaves 3 Inches Long

Number		Each
126T	**26-Leaf Thickness Gage.** With tapered leaves. Thicknesses: .0015, .002, .0025, .003, .004, .005, .006, .007, .008, .009, .010, .011, .012, .013, .014, .015, .016, .017, .018, .019, .020, .021, .022, .023, .024, .025 inch.	$5.60
126	**26-Leaf Thickness Gage.** With straight leaves. Exactly same thicknesses as No. 126T but leaves not tapered.	5.60
122	**22-Leaf Thickness Gage.** With straight leaves. Thicknesses: .004, .005, .006, .007, .008, .009, .010, .011, .012, .013, .014, .015, .016, .017, .018, .019, .020, .021, .022, .023, .024, .025 inch.	4.00

Packing: One in a box, three in a carton.



Thickness Gages with Tapered Leaves

With Patent Lock

These are best for long reach, as they have 4½ and 6-inch leaves. Especially popular with motor mechanics, for fitting pistons in cylinders. In such work the Patent Lock, and the long leaves tapered to ¼ inch width are very convenient.

Each of these Gages has case into which the leaves fold. New leaves can very readily be inserted. No. 208T with leaf extended and locked in line with case gives an overall reach of 9 inches, while, with No. 308T, overall reach is 12 inches.

All Gages below have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness.

Lock Nut of these Gages will lock any one or more leaves in any position, thus easiest to use and reducing chances of error. It also securely locks all leaves in the case. It is operated by same hand that holds the tool.

Number		Each
208T	**8-Leaf Thickness Gage.** With tapered leaves, 4½ inches long..... Thicknesses: .002, .003, .004, .006, .008, .010, .012, .015 inch. Overall length with leaf extended and locked, 9 inches.	$4.00
308T	**8-Leaf Thickness Gage.** With tapered leaves, 6 inches long..... Thicknesses: Same as No. 208T. Overall length with leaf extended and locked, 12 inches.	5.00

Packing: One in a box.

Leaves Only for All Thickness Gages

For use as separate pieces or for replacing Leaves in Gages.

In ordering 3-inch Leaves.....Specify thickness and "straight" or "tapered."
In ordering 4½ and 6-inch Leaves.....Specify thickness.

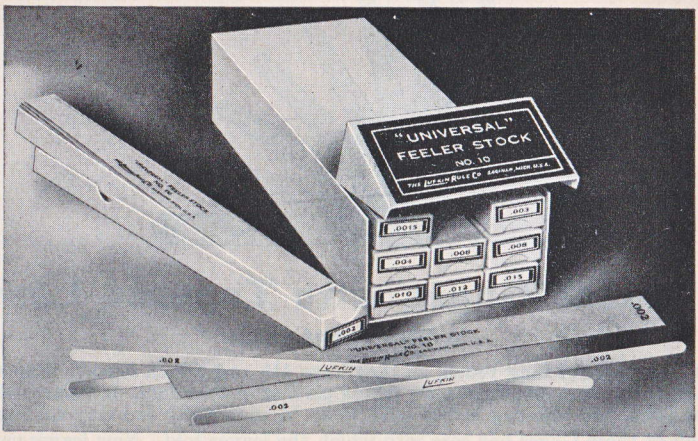
Length		Each
3 inch Leaves.	Straight or Tapered.....	$0.35
4½ inch Leaves.	Tapered Only.....	.55
6 inch Leaves.	Tapered Only.....	.70

Ground Thickness Gage Stock

This is offered to meet the demand for Ground Thickness Gage Stock Only, in long pieces. This Stock we supply in any of our standard thicknesses, ½ inch wide, and in lengths listed below. Each of these pieces is marked with its thickness.

Always Specify "Ground Stock" and State Thickness and Length.

Length	Each
6-inch Pieces.....	$0.35
12-inch Pieces.....	.70
18-inch Pieces.....	1.05



"Universal" Feeler Stock—No. 10

In 1-Foot Pieces

Clean Stock. Handy Length. Popular Priced.
Offered in 27 Thicknesses

This Feeler or Thickness Gage Stock is most extensively used in automobile and other motor work, both manufacturing and servicing. It is employed in determining clearance of tappets, gear play, ring-groove clearance, fitting pistons, adjusting spark gap, etc. Used as well in experimental work, and in other shops also by tool makers and machinists.

Each piece is marked with its thickness and has ends rounded. This Stock is ½ inch wide and each 1-foot piece is in individual envelope, flat and ready to hand out. This prevents the waste due to rust and stain from handling, and to breaking from a coil.

No. 10 Feeler Stock. (Specify Thickness Also.)

Made In The Following Thicknesses

Thickness, in.	.001	.0015	.002	.0025	.003	.004	.005	.006	.007	.008	.009	.010	.011	.012
Price, foot	$0.92	.46	.46	.46	.46	.33	.33	.33	.27	.27	.27	.27	.27	.27
Thickness, in	.013	.014	.015	.016	.017	.018	.019	.020	.021	.022	.023	.024	.025	
Price, foot	$0.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	

Packing: Twelve 1-foot pieces of one thickness in a box, each piece in individual envelope.

No. 10 Assortment of Feeler Stock ..... Price per Assortment $37.50
Includes These 9 Thicknesses, twelve 1-ft. pieces of each:

.0015, .002, .003, .004, .006, .008, .010, .012, .015

Each of the above sizes packed 12 pieces in a box, the nine boxes put up in handy, open end carton, as illustrated.

"Universal" Feeler Stock—No. 110

In 25-Foot Roll in Metal Case.

Clean Stock. Popular Priced.
Offered in 27 Thicknesses.

Smooth-edged Thickness Gage or Feeler Stock, ½ inch wide, in 25-foot roll, in metal case. This Feeler Stock carries Lufkin name and cutting line each foot, and is prominently marked with its thickness every six inches throughout.

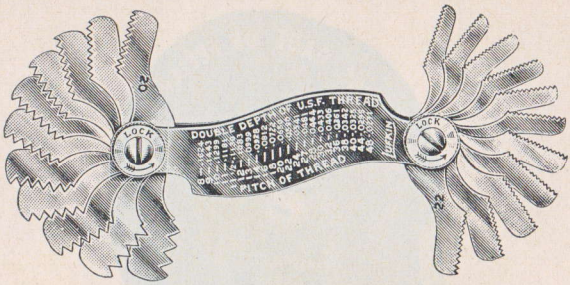
The metal case or holder is of improved pattern. It is of a size best to handle and to keep the stock in proper condition. From it the stock is always easily withdrawn; the revolving core makes it simple to recoil any unused portion.

This is stock as required by automobile mechanics in fitting pistons, setting tappets, adjusting spark gap, gear play, etc., and in experimental work by toolmakers and machinists everywhere. In our metal case it is easiest to carry on hand by dealer or at tool crib, and most readily withdrawn and cut to length by distributor or mechanic.

No. 110 Feeler Stock. (Specify thickness also).

Thickness in inches		Price of 25-Foot Roll in Case
.001	Feeler Stock	$23.00
.0015	Feeler Stock	11.50
.002	Feeler Stock	11.50
.0025	Feeler Stock	11.50
.003	Feeler Stock	11.50
.004	Feeler Stock	8.25
.005	Feeler Stock	8.25
.006	Feeler Stock	8 25
.007	Feeler Stock	6.75
.008	Feeler Stock	6.75
.009	Feeler Stock	6.75
.010	Feeler Stock	6.75
.011	Feeler Stock	6.75
.012	Feeler Stock	6.75
.013	Feeler Stock	6.75
.014	Feeler Stock	6.75
.015	Feeler Stock	6.75
.016	Feeler Stock	6.75
.017	Feeler Stock	6.75
.018	Feeler Stock	6.75
.019	Feeler Stock	6.75
.020	Feeler Stock	6.75
.021	Feeler Stock	6.75
.022	Feeler Stock	6.75
.023	Feeler Stock	6.75
.024	Feeler Stock	6.75
.025	Feeler Stock	6.75

Packing: 25-foot roll in case in a box.
Note: .020 or over, furnished in cardboard box.



Screw Pitch Gages

With Patent Locks. Without Locks.

These Gages measure the pitch, or number of threads per inch, of "National" or "U. S. Form" Thread and Sharp "V" Thread. A valuable feature of Series 74 Gages is the Patent Lock, described below.

All Screw Pitch Gages listed below have blades (or leaves) shaped to quickly measure the inside threads of nuts as well as the outside threads of bolts, screws, etc. All have case into which, at each end, blades fold. Each blade is marked with its pitch. On the outside of case the Double Depth of U. S. Form Thread is given, this being the recognized standard thread. To obtain double depth of sharp "V" Threads, for the same pitch, add ⅓ to the double depth given for U. S. Form Thread.

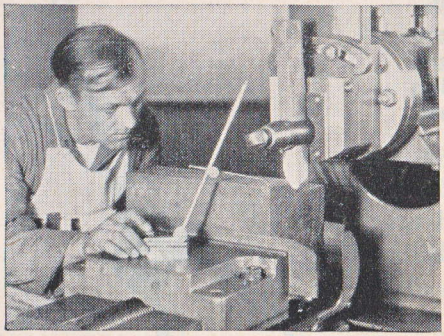
Gages 74A, B, C, and D have Lock Nut at both ends of case, by means of which any blade can be firmly locked in any position, or all held in case when not in use. This eliminates many chances of error and is especially handy when one pitch is used repeatedly. Lock is operated by same hand that holds the tool.

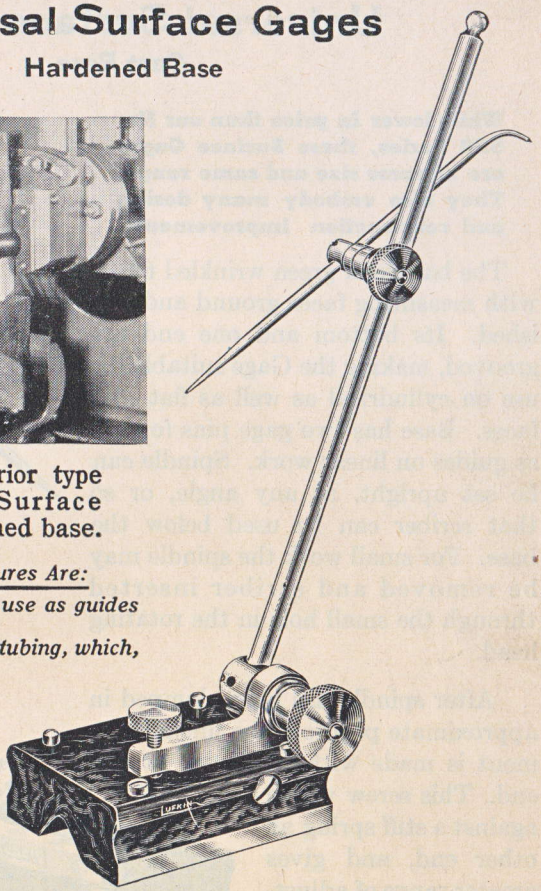
Number		Each
74A	**22-Pitch Gage. With Patent Locks** ..... Pitches: 8-9-10-11-11½-12-13-14-16-18-20 22-24-27-28-30-32-36-38-40-44-48.	$2.60
73A	**22-Pitch Gage.** Without Lock ..... Pitches: Exactly same as Gage No. 74A, above.	2.20
74B	**24-Pitch Gage. With Patent Locks** ..... Pitches: 4-4½-5-5½-6-7-8-9-10-11-11½-12-13-14-16-18-20-22-24-27-28-30-32-36.	3.00
73B	**24-Pitch Gage.** Without Lock ..... Pitches: Exactly same as Gage No. 74B, above.	2.60
74C	**28-Pitch Gage. With Patent Locks** ..... Pitches: 8-9-10-11-11½-12-13-14-16-18-20-22-24-27-28-30-32-36-38-40-44-48-50-56-60-64-72-80.	3.40
73C	**28-Pitch Gage.** Without Lock ..... Pitches: Exactly same as Gauge No. 74C, above.	3.00
74D	**28-Pitch Gage. With Patent Locks** ..... Pitches: 3-3¼-3½-4-4½-5-5½-6-7-8-9-10-11-11½-12-13-14-16-18-20-22-24-27-28-30-32-36-38.	3.40
73D	**28-Pitch Gage.** Without Lock ..... Pitches: Exactly same as Gage No. 74D, above.	3.00

Packing: One in a box, six in a carton.

Universal Surface Gages

Hardened Base





These are the superior type of standard size Surface Gage, i.e. have hardened base.

Other Valuable, Unique Features Are:

Base has four gage pins, for use as guides on linear work.

Spindle made of hollow steel tubing, which, while rigid, is light, hence will not, even when used with attachments, tip the base.

Spindle and scriber holes are pinned, keeping them constantly in alignment.

The fine adjustment permits greater range of adjustment than on any other similar Gage.

Base is finished in mottled blue, with all measuring faces ground and polished. Its bottom and one end are grooved. Spindle can be set upright, at any angle, or so that scriber can be used below the base. For small work the spindle may be removed and scriber inserted through small hole in the rotating head. After spindle has been clamped in approximate position, the fine adjustment is made with the screw at one end. This screw works against a stiff spring at the other end.

Length of spindle, as listed, does not include the base.
Bases of Nos. 520A, 520B and 520C are 3¼ inches long.

Number			Each
520A	Universal Surface Gage.	With 9-inch spindle	$8.80
520B	Universal Surface Gage.	With 9 and 12-inch spindles	9.80
520C	Universal Surface Gage.	With 12-inch spindle	9.30
520K	Indicator Attachment For Any Above (A spindle clamp with hole for holding Indicator.)		1.25
	18-inch Spindle for any above	Extra each	1.25

Packing: One in a box.

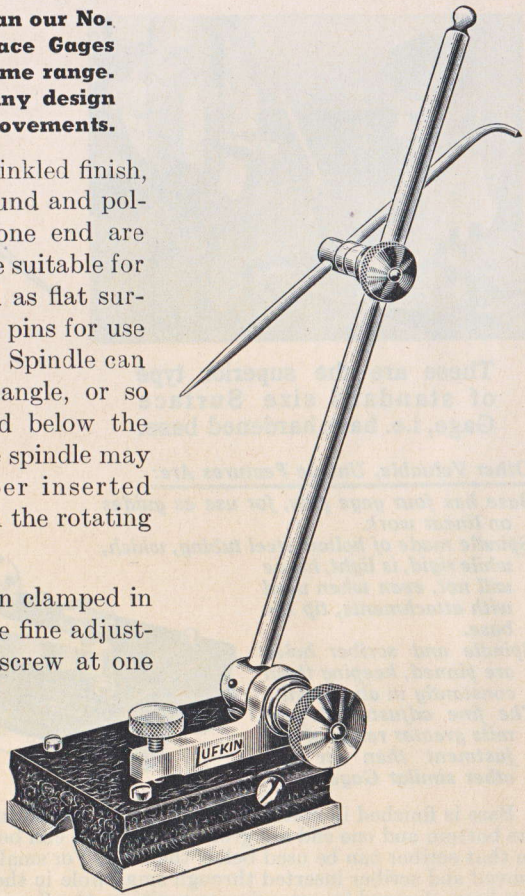
Universal Surface Gages

Cast Base

While lower in price than our No. 520 Series, these Surface Gages are of same size and same range. They also embody many design and construction improvements.

The base is in green wrinkled finish, with measuring faces ground and polished. Its bottom and one end are grooved, making the Gage suitable for use on cylindrical as well as flat surfaces. Base has two gage pins for use as guides on linear work. Spindle can be set upright, at any angle, or so that scriber can be used below the base. For small work the spindle may be removed and scriber inserted through the small hole in the rotating head.

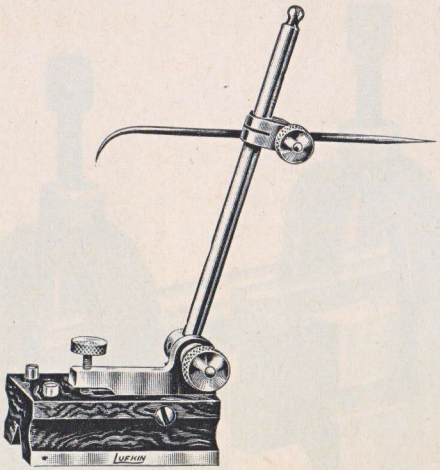
After spindle has been clamped in approximate position, the fine adjustment is made with the screw at one end. This screw works against a stiff spring at other end, and gives greater range of adjustment than on any other similar Gage.



Length of spindle, as listed, does not include the base. Bases of Nos. 522A, 522B and 522C are 3¼ inches long.

Number			Each
522A	**Universal Surface Gage.**	With 9-inch spindle	$7.10
522B	**Universal Surface Gage.**	With 9 and 12-inch spindles	8.10
522C	**Universal Surface Gage.**	With 12-inch spindle	7.60
520K	**Indicator Attachment For Any Above** (A spindle clamp with hole for holding Indicator.)		1.25
	18-inch Spindle for any above	Extra each	1.00

Packing: One in a box.



Toolmakers (Small) Universal Surface Gages

Hardened Base

These Surface Gages are especially suitable for small work, are nicely proportioned and well built.

Following Are Some of Their Valuable Features:

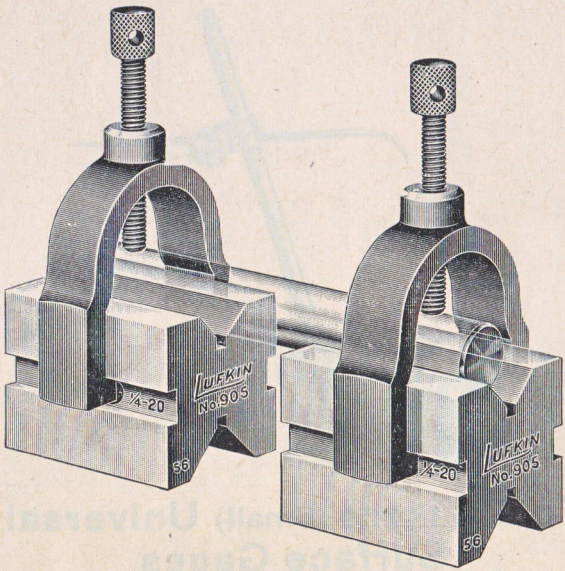
Base is hardened and has all measuring faces ground and polished.
Base has two gage pins for use as guides on linear work.
Spindle and Scriber holes are pinned, keeping them in constant alignment.
The fine adjustment permits greater range of adjustment than on any other similar Gage.

Base is in mottled, blue finish. Its bottom and one end are grooved for cylindrical work. Spindle can be set upright, at any angle, or so that scriber can be used below the base. For small work spindle may be removed and scriber inserted through the small hole in the rotating head. After the spindle has been clamped in approximate position, the fine adjustment is made with the screw at one end which works against a stiff spring at other end. Base takes very little tool chest space for it is only 1½ inches wide and, including rotating head, but 1½ inches high.

Length of spindle, as listed, does not include the base.
Bases of Nos. 521A, 521B and 521C are 2⅛ inches long.

Number			Each
521A	**Toolmakers Surface Gage.**	With 4-inch spindle.....	**$7.90**
521B	**Toolmakers Surface Gage.**	With 4 and 7-inch spindles.....	**8.40**
521C	**Toolmakers Surface Gage.**	With 7-inch spindle.....	**8.00**

Packing: One in a box.



V Blocks and Clamps

Hardened and Ground

These V Blocks are built for use where an extremely accurate setting is required, and are suitable also for general run of work. V Blocks are employed in holding work for drilling, milling, grinding and other operations, and, in laying out in connection with surface or angle plate. One of the unique, valuable features of Lufkin V Blocks is the tapped hole through the sides, useful as described below.

Blocks are made of tool steel, hardened and ground. Approximate dimensions of each Block, $1\frac{5}{8}$ inches long, $1\frac{1}{4}$ inches square: Clamping capacity, one inch diameter. The V's are ground central, parallel and square with the ends and sides. The Blocks are made and numbered in pairs, so the V grooves in each pair are always in alignment. The clamps are strong, yet light weight. They are of steel, drop forged.

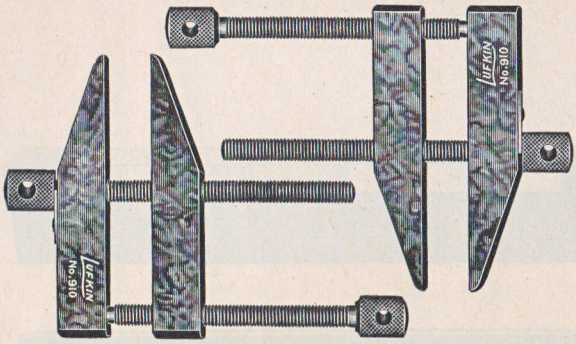
The tapped hole in these Blocks is particularly useful when working on an angle plate fastened to a lathe face plate or a magnetic chuck. By using a 1/4-20 screw, the Block can be securely fastened to the angle plate at any angle desired, without use of other clamps which would interfere with work in laying out, milling, drilling, grinding, etc.

Illustration Shows One Set, i.e. 2 Blocks and 2 Clamps.
Blocks Sold Only in Sets, as they are Made in Pairs.

Number		Per Set
905	**Set of V Blocks and Clamps**	$10.25

Packing: One set in a box.

Extra Clamps only for V Blocks.....Price, each **$1.40**



Toolmakers Parallel Clamps

These Clamps are of steel, case-hardened, and are very useful for holding small work together in drilling, tapping, etc. They are so designed as to be strong and rigid and to insure a positive hold. Ends of the jaws are rounded to permit clamping under shoulders or in recesses.

One handy feature of these Clamps is the clip attachment which prevents sliding of the loose jaw on the screw. Ours is a flat clip, flush with back of the jaw, which eliminates interference with fingers when opening and closing Clamp.

Illustration Shows One Pair (2 Complete Clamps)

Number		Clamping Capacity	Length of Jaws	Per Pair (2 Clamps)
910A	Pair of Parallel Clamps.....	3/4 inch	1 5/8 inch	$2.40
910B	Pair of Parallel Clamps.....	1 1/4 inch	2 inch	2.90
910C	Pair of Parallel Clamps.....	1 3/4 inch	2 1/2 inch	3.30
910D	Pair of Parallel Clamps.....	2 1/4 inch	3 inch	4.00
910E	Pair of Parallel Clamps.....	2 3/4 inch	4 inch	4.60
910F	Pair of Parallel Clamps.....	3 1/2 inch	5 inch	8.20

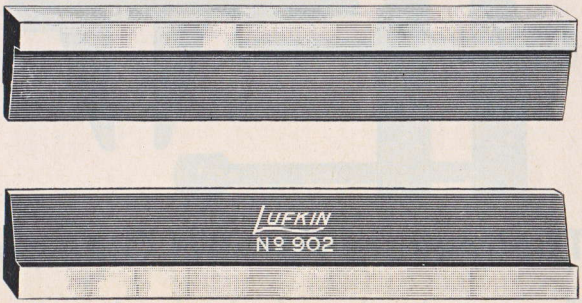
Packing: One pair (2 clamps) in a box.

Duplicate Parts of Toolmakers Parallel Clamps

(When ordering Screws specify stock number and "full threaded" or "smooth end." On Jaws specify stock number and "with tapped holes" or "with holes not tapped.")

Prices below are for Screws and Jaws of either style.

Screws, all sizes except F.	Each	$0.50	Jaws, for sizes A & B ...	Each	$0.50
Screws, size F.....	Each	.80	Jaws, for size C.....	Each	.60
Clip, with clip screw.....	Each	.20	Jaws, for sizes D & E....	Each	.95
			Jaws for size F.....	Each	1.50



Hold Downs

Made in Five Lengths—2 to 6 Inches

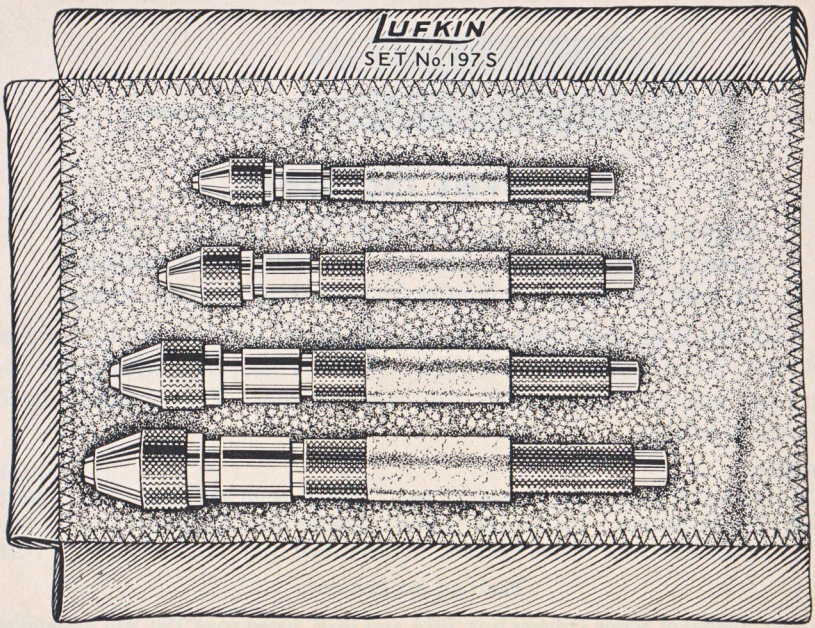
These Hold Downs are of steel, hardened and ground, and are of best design to securely hold work flat and without distortion in a vise or on a machine bed. They are used where other methods of clamping are inconvenient and are especially handy for holding thin work.

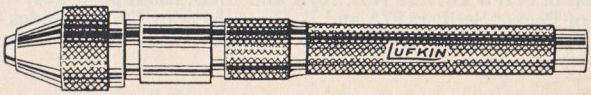
Our Hold Downs not only clamp the work most securely but constantly force it downward against parallel or machine bed, because both contact edges are properly tapered and there is a clearance step along entire length of front of the under side.

While made in five lengths, all are of same width and thickness, so any of the lengths can be used together on long work.

Number		Length	Width, Inches	Price per Pair
902A	Hold Downs	2-inch	25/32	$2.60
902B	Hold Downs	3-inch	25/32	2.80
902C	Hold Downs	4-inch	25/32	3.25
902D	Hold Downs	5-inch	25/32	4.10
902E	Hold Downs	6-inch	25/32	5.00

Packing: One pair in a box.





Pin Vises

Dull Nickel Plated Finish Prevents Glare
In These Vises the Chuck is Beveled Both Front and Back. This Gives Longer Bearing On the Work, Affords More Firm Grip, Better Centering and also Prevents Wobbling.

Near the Chuck End These Vises Have a Straight, Smooth Bearing Portion, To Insure More True Running When Clamped in Collet or Chuck.

These are well-proportioned Vises for holding small stock to be worked, also holding taps, drills, scribers and small files, in fact any small piece inserted in them. These Vises are nickel plated and have hardened jaws. Hole running entirely through handle affords the chuck a close-up grip, even on long rods, and this hole will accommodate stock up to the full stated capacity of the Vise. Knurling at convenient locations gives firm hold and, handle being of smaller diameter than the chuck end, aids rapid rotation between thumb and finger when forming small work.

We offer individual Pin Vises, also the complete set in practical case.

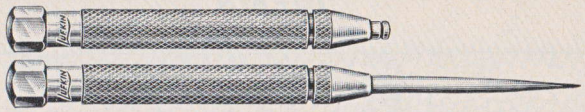
Individual Pin Vises.

No. 197A	Pin Vise.	Capacity 0 to .055 inch.	Price, each **$1.00**
No. 197B	Pin Vise.	Capacity .025 to .075 inch.	Price, each **1.00**
No. 197C	Pin Vise.	Capacity .045 to .135 inch.	Price, each **1.20**
No. 197D	Pin Vise.	Capacity .110 to .200 inch.	Price, each **1.20**

Complete Set of Pin Vises.

No. 197S **Set of 4 Pin Vises, in Red Fitted Case, as illustrated**.....Per Set **$4.80**
Contains one each of Nos. 197A, B, C, and D.

Packing: Nos. 197A, B, C and D, Six in a box. **Set** No. 197S, One in a box.



Pocket Scribers

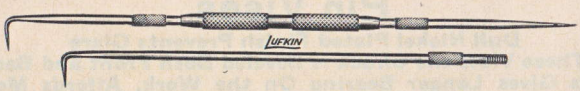
Very handy tools for any mechanic. Scriber point is of best quality steel, properly tempered and with shank designed to hold it solidly in handle by means of knurled chuck.

Handle is of steel tubing, knurled to afford secure hold, and nickel plated. Illustrations show Scriber ready for use, also with point reversed, inserted and locked into the handle. The hexagon head prevents rolling.

Number			Each
87A	Pocket Scriber. Dia. handle ¼ inch.	**Length point 2⅜ inches**.....	$0.70
87B	Pocket Scriber. Dia. handle ⅜ inch.	**Length point 2⅞ inches**.....	.75
	Points Only for Above Scribers. (Specify A or B).....		.25

Packing: Six in a box.

NOTE: Blades of Screw Drivers Nos. 187A and 187B, listed page T99, will fit handles of Pocket Scribers 87A and B. On such Screw Driver Blades Only, specify "A" or "B." Their price: **$0.18** each.



Scribers

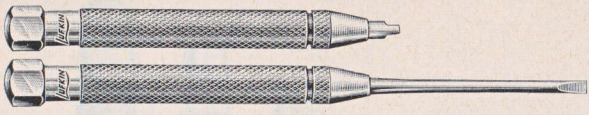
These handy Scribers have points of best quality steel, properly tempered. Points and stock have knurled portions for firm finger hold. The long bent point is designed for reaching through holes, etc.

Stock is of size convenient to hold. All points fit either end of the stock and are threadedly engaged in the stock.

Length of Scriber: With short bent point, 9 inches.
With long bent point, 12 inches.

Number		Each
88A	**Scriber with 3 Points.** (1 straight, 1 long and 1 short bent).....	$1.15
88B	**Scriber with 2 Points.** (1 straight and 1 short bent).....	.85
	Points Only for above Scribers: Straight Point.....	.25
	Short Bent Point.....	.25
	Long Bent Point.....	.30

Packing: Six in a box.



Pocket Screw Drivers

Handy vest pocket Screw Drivers. Blade is of best quality steel, properly shaped and tempered. Shank of blade, together with knurled chuck of handle, most firmly hold the blade, so it cannot come out or turn in the handle.

Handle is of steel tubing, knurled to afford secure hold, and nickel plated. Illustrations show Screw Driver ready for use, also with point reversed, inserted and locked into the handle for convenience in carrying. The hexagon head prevents rolling.

Number				Each
187A	Screw Driver.	Dia. handle 1/4 inch.	Length blade 2 1/2 inches.....	$0.80
187B	Screw Driver.	Dia. handle 3/8 inch.	Length blade 3 inches.....	.85
	Blades Only for above Screw Drivers. (Specify A or B).....			.30

Packing: Six in a box.

NOTE: Points of Scribers Nos. 87A and 87B, listed page T98, will fit handles of Screw Drivers 187A and B. On such Scriber Points Only, specify "A" or "B." Price: **$0.20** each.

Drive Pin Punches

Listed Individually, Also Set of 8 In Leatherette Case

These Punches are made of best quality tool steel. They are nicely shaped, hardened and polished. Body is knurled to afford good finger grip.

Individual Drive Pin Punches

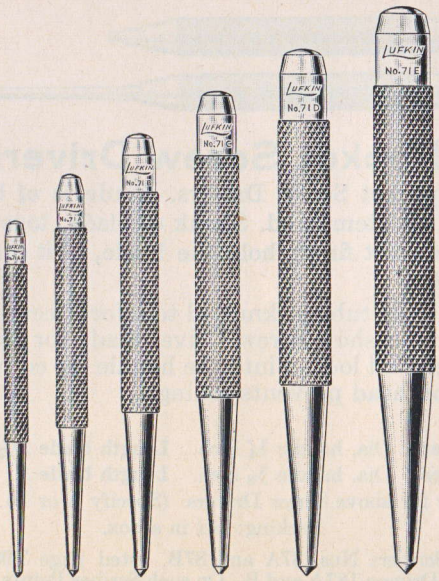
Number		Diameter of Point	Length of Punch	Each
72A	Drive Pin Punch..	1/16 inch	3 3/8 inches	$0.30
72B	Drive Pin Punch..	3/32 inch	3 1/2 inches	.30
72C	Drive Pin Punch..	1/8 inch	3 3/4 inches	.30
72D	Drive Pin Punch..	5/32 inch	4 inches	.30
72E	Drive Pin Punch..	3/16 inch	4 1/8 inches	.30
72F	Drive Pin Punch..	7/32 inch	4 3/8 inches	.30
72G	Drive Pin Punch..	1/4 inch	4 5/8 inches	.30
72H	Drive Pin Punch..	5/16 inch	4 7/8 inches	.30

Set of Drive Pin Punches

Number		Per Set
72S	Set of 8 Drive Pin Punches. In Red Fitted Case.....	$2.80

Contains one each of above Punches, **72A** to **72H**, inclusive.

Packing: Nos. 72A to 72G, 12 in a box. No. 72H, 6 in a box. No. 72S, 3 Sets in a box.



Center Punches

Listed Individually, Also Set of 6 in Red Fitted Case

These Center Punches are made of fine quality tool steel. They are properly shaped and points carefully ground. These Punches are hardened and polished and have body knurled to afford good finger grip.

Individual Center Punches

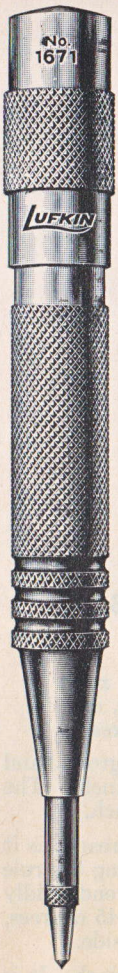
Number		Diameter at Top of Tapered Point	Length of Punch	Price Each
71AA	Center Punch.....	1/16 inch	3 1/8 inches	$0.35
71A	Center Punch.....	5/64 inch	3 1/2 inches	.35
71B	Center Punch.....	3/32 inch	3 7/8 inches	.35
71C	Center Punch.....	9/64 inch	4 1/4 inches	.35
71D	Center Punch.....	5/32 inch	4 5/8 inches	.35
71E	Center Punch.....	3/16 inch	5 inches	.40

Set of Center Punches

Number		Per Set
71S	Set of 6 Center Punches. In Red Fitted Case.....	$2.45

Contains one each of above Punches, **71AA** to **71E**, inclusive.

Packing: Nos. 71AA to 71D, 12 in a box.
No. 71E, 6 in a box.
No. 71S, 3 Sets in a box.



Automatic Center Punch

With Adjustable Stroke

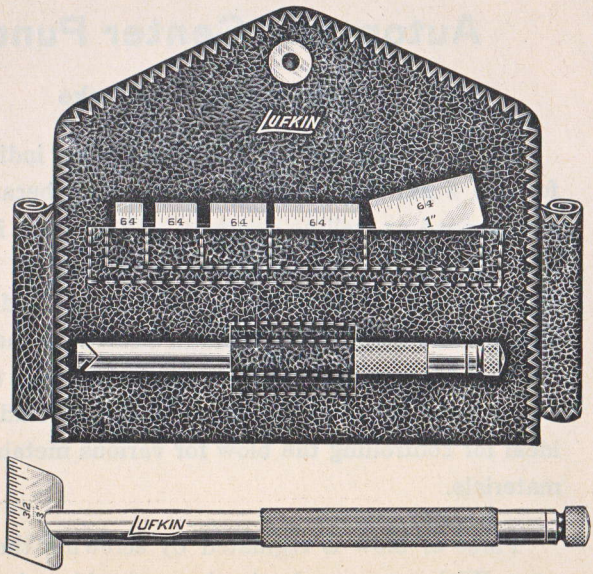
An Automatic Center Punch is almost indispensable for fine work, and handy for all marking because it assures speed as well as accuracy. As hammer is entirely unnecessary, but one hand need be employed. Thus the Punch can be most precisely placed and held. Hence, slipping and many other chances of error in the hammer method are avoided. It also saves marring the work. Our Punch has an unusually wide range of adjustment, ideal for controlling the blow for various metals or other materials.

Force of blow is regulated by screwing the knurled cap. With cap completely down the blow is heaviest. As it is screwed upward, it decreases. This Punch has a simple mechanism, which, when tool is held on the work in any position and pressure applied, automatically, at the will of the mechanic, strikes the blow. Set at any one point, the tension of spring is constant, giving impressions of uniform depth.

Diameter of Punch is one-half inch; length, when set for medium stroke, is five inches. The grooved and knurled body gives most firm hold. All working parts are properly hardened. Point is easily removed, ground and replaced. Extra points are offered.

Number		Each
1671A	**Automatic Center Punch**	$3.85
	Extra Points Only for above.....Each	$0.35

Packing: One in a box.



Set of Tempered Steel Rules

With Holder

Useful in general tool and die work and wherever measuring must be done in grooves, on narrow shoulders, in recesses, keyways, etc., places too small for an ordinary rule to enter, or depth hard to reach.

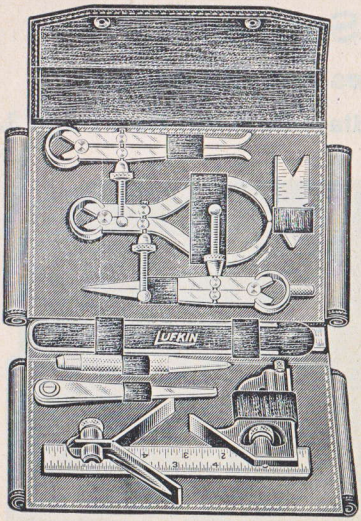
These thin, tempered steel, machine divided Rules are carefully ground and well finished. All are graduated one side 32nds, other side 64ths inch. (The ½ and 1-inch rules can be furnished graduated 50ths and 100ths inch.)

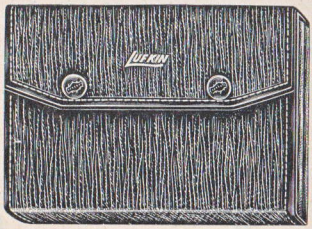
The Holder is especially well suited to its work. It gives good reach, as it is 4 inches long. It will clamp thicknesses up to 1/16 inch. For holding the rule it has, in one end, two slots, and slight turn of knurled nut at other end rigidly clamps the rule. Thus it will hold any of the rules at either 30 or 45 degrees, also at right angles to the holder or when sharply cocked to either side.

Red Fitted Case which contains Set No. 20S is 2 x 4½ x ¼ inch. It is ideal for preventing loss or misplacement of these very small Rules, also for protecting Rules and Holder.

Number		Price per Set
20S	**Set of Rules with Holder. In Red Fitted Case.** Includes rules of lengths: 1/4, 3/8, 1/2, 3/4 and 1-inch.....	$4.20
No. 2010	**Rules Only. Lengths: 1/4, 3/8, 1/2, 3/4 and 1-inch.** Always specify length as well as "No. 2010," as this stock number applies to each rule in the above Set.....**Price per Rule**	$0.55
No. 20	**Holder Only,** for above Rules.....**Price, Each**	1.15

Packing: One set in a box.





Students Tool Set No. 1

For Students, Apprentices and Mechanics

This set includes only those tools that are indispensable at the outset to the student or beginner. Each tool in this Set is a standard one. All are put up in a compact, folding case, convenient to carry to and from classes or shop.

All these tools are identically same as those listed in this Catalog and as sold to fine mechanics for their regular work. Thus these Precision Tools may well become a part of the more complete kit or chest of tools which the mechanic will require in his shop work to follow.

These tools are nicely arranged and held in the Fitted Case, which folds to size 7¼x5¼x1-inch. Set complete with Case weighs 1¼ pounds.

No. 1 Students Tool Set, With Case..... Price, per Set $17.00

Contents of Set No. 1—One Each of the Following:

Number	Description	Shown
25C	6-inch Combination Square. (Blade with square and center heads)..	Page T47
2110R	6-inch Flexible Steel Rule.....	Page T109
40	4-inch "Banner" Spring Divider.....	Page T70
41	4-inch "Banner" Outside Spring Caliper...	Page T71
42	4-inch "Banner" Inside Spring Caliper...	Page T71
17	4-inch Firm Joint Hermaphrodite Caliper.	Page T74
71C	Center Punch.....	Page T100
36	Center Gage.....	Page T67

Packing: One set in a box.

NOTE: *More Complete Tool Sets for Students—See pages T104 and T105.*

Students Tool Set No. 2

For Students, Apprentices and Mechanics

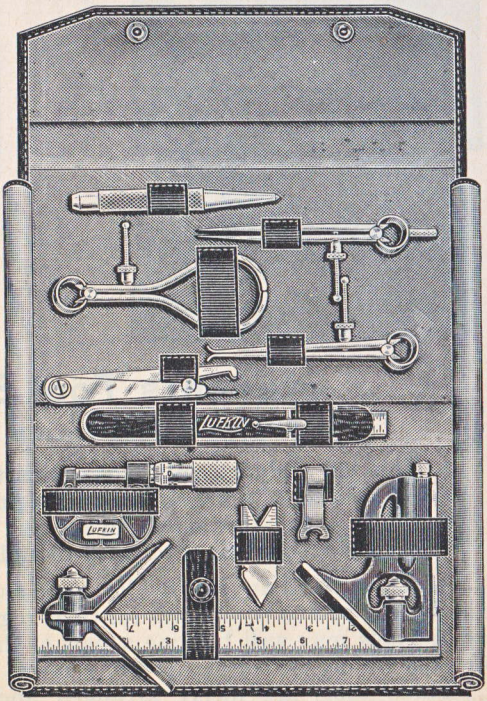
This Is Our Students Set Intermediate Between Nos. 1 and 3.

Differs From Set No. 1 In These Ways:

A Micrometer is included.
Combination Square is 9-inch, instead of 6-inch.
Other Tools are of superior type.
Case of more convenient shape.

In this Set also, each tool is a standard one, identical with those sold to fine mechanics for their regular work. Therefore these Precision Tools commonly are the nucleus of the complete set required in later work.

The Fitted Case, in which these Tools are nicely arranged and held, is compact and convenient to carry to and from classes and shop. It folds to 10¼ x 6 x 1 inch. Set complete with Case weighs 2 pounds.

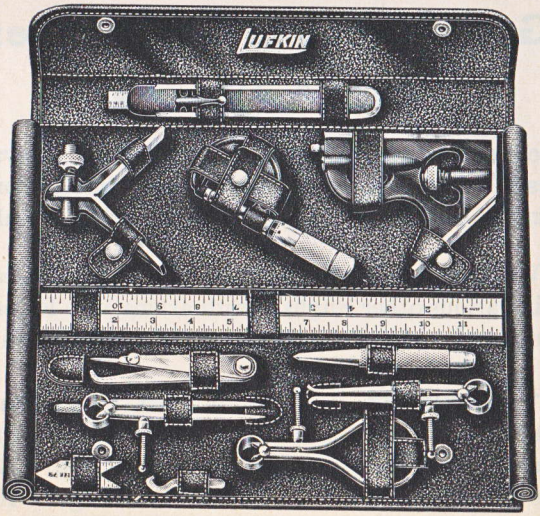


No. 2 Students Tool Set, with Case ..... Price, per Set $32.00

Contents of Set No. 2—One Each of the Following:

Number	Description	Shown
1911	1-inch Chrome Clad Micrometer.....	Page T21
25C	9-inch Combination Square. (Blade with square and center heads)	Page T47
2110R	6-inch Flexible Steel Rule.....	Page T109
140	4-inch Toolmakers Spring Divider.....	Page T68
141	4-inch Toolmakers Outside Spring Caliper	Page T69
142	4-inch Toolmakers Inside Spring Caliper..	Page T69
A-17	4-inch Firm Joint Hermaphrodite Caliper	Page T74
71D	Center Punch.....	Page T100
36	Center Gage.....	Page T67

Packing: One set in a box.



Students Tool Set No. 3

For Students, Apprentices and Mechanics

No. 3 Is the Best of Our Three Sets for Students

Superior Features of Set No. 3 as Compared with Set No. 1:

A Micrometer is included.
Combination Square is 12-inch, the size most used in shops.
The other Tools are of superior type.
The Case is finer, of heavier and more durable material, better shape and finish.

Superior Features of No. 3 as Compared with No. 2:

No. 3 has 12-inch instead of 9-inch Combination Square.
Case of Set No. 3 is of better grade, shape and finish.

Each tool in Set No. 3 is a popular, standard one, same as used by fine mechanics. Therefore these identical tools usually become a part of the chest of tools later required.

The compact Fitted Case is of size and shape most convenient to carry to class or shop. It folds to size 12¾x5x1¼ inch. Set complete with case weighs 2½ pounds.

No. 3 Students Tool Set, with Case ..... Price, per Set **$33.60**

Contents of Set No. 3—One Each of the Following:

Number	Description	Shown
1911	1-inch Chrome Clad Micrometer	Page T21
25C	12-inch Combination Square	
	(Blade with Square and Center Heads)	Page T47
2110R	6-inch Flexible Steel Rule	Page T109
140	4-inch Toolmakers Spring Divider	Page T68
141	4-inch Toolmakers Outside Spring Caliper	Page T69
142	4-inch Toolmakers Inside Spring Caliper	Page T69
A-17	4-inch Firm Joint Hermaphrodite Caliper	Page T74
71D	Center Punch	Page T100
36	Center Gage	Page T67

Packing: One set in a box.

Graduations of Steel Rules

English (inch) Measure

In connection with Steel Rules or Scales, shown on pages following, we detail below those combinations of markings which are known by Graduation Numbers.

We catalog also, on the following pages, Rules in various other English graduations, also Rules marked Metric only and Metric-English.

No. 1 Graduation
One Edge: 10-20-50-100ths.
One Edge: 12-24-48ths.
One Edge: 16-32-64ths.
One Edge: 14-28ths.

No. 2 Graduation
One Edge: 10-20-50-100ths.
One Edge: 12-24-48ths.
One Edge: 16-32-64ths.
One Edge: 8ths.

No. 3 Graduation
One Edge: 32nds.
One Edge: 64ths.
One Edge: 10ths.
One Edge: 50ths.

No. 4 Graduation
One Edge: 64ths.
One Edge: 32nds.
One Edge: 16ths.
One Edge: 8ths.

No. 5 Graduation
One Edge: 32nds.
One Edge: 64ths.
One Edge: 10ths.
One Edge: 100ths.

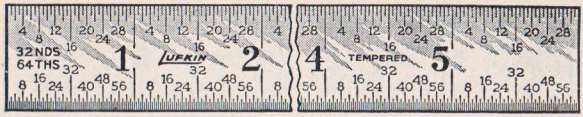
No. 7 Graduation
One Edge: 64ths.
One Edge: 32nds.
One Edge: 16ths.
One Edge: 100ths.

No. 10 Graduation
One Edge: 32nds.
One Edge: 64ths.

No. 11 Graduation
One Edge: 64ths.
One Edge: 100ths.

No. 12 Graduation
One Edge: 50ths.
One Edge: 100ths.

No. 16 Graduation
One Edge: 32nds.
One Edge: 64ths.
One Edge: 50ths.
One Edge: 100ths.



Showing "Readable" Graduations
Figures staggered, easy to locate.

Spring Tempered Steel Rules

Machine Divided. **Thickness: Approx. 3/64ths Inch.**

Rules of this weight are extensively used. All Rules listed below are accurately graduated on both edges of both sides and have clear, dark lines and figures, easy to read. All are edge, surface and end ground.

***"Readable" Graduations**—Means inch subdivisions numbered as follows: 32nds every 4th division. 64ths every 8th division. 100ths every 10th division.

Number

2204R Graduation No. 4: 8ths, 16ths, 32nds, 64ths inch.
*"Readable" Graduations on all lengths.
Length: 1 to 48 inches. Prices below.

2207R Graduation No. 7: 16ths, 32nds, 64ths, 100ths inch.
*"Readable" Graduations on all lengths.
Lengths, 1 to 48 inches. Prices below.

2201 Graduation No. 1: 10ths, 20ths, 50ths, 100ths; 12ths, 24ths, 48ths; 16ths, 32nds, 64ths; 14ths, 28ths inch. For Gear Cutting.
Lengths: 6 and 12 inch only. Prices below.

2202 Graduation No. 2: 10ths, 20ths, 50ths, 100ths; 12ths, 24ths, 48ths; 8ths; 16ths, 32nds, 64ths inch.
Lengths: 6 and 12 inch only. Prices below.

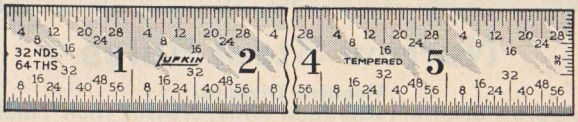
Always Specify Stock Number and Length

Length, inches	1	2	3	4	6	9	12	18	24	36	48
Price, each....	$.50	$.70	$.95	$1.15	$1.35	$2.05	$2.50	$4.00	$4.75	$10.50	$15.00
Approx. width.	1/2"	1/2"	1/2"	5/8"	3/4"	7/8"	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"

Packing: 12 inches and under, six in a box; others, one in a package.

Spring Tempered Steel Rules

With "End" and "Readable" Graduations



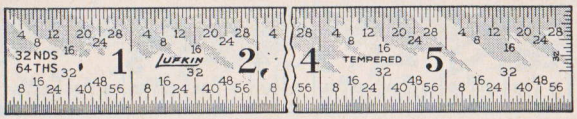
Showing "Readable" and "End" Graduations
Figures staggered, easy to locate

***"Readable" Graduations**—Means inch subdivisions numbered as follows: 32nds every 4th division. 64ths every 8th division. 100ths every 10th division.
****"End" Graduations**—Means rule graduated to 32nds across one end each side.

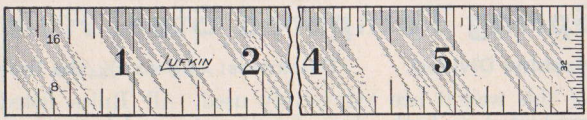
2204R-E Graduation No. 4: 8ths, 16ths, 32nds, 64ths inch.
*"Readable" Graduations—**"End" Graduations on 6 and 12 inch only.

Length, inches	6	12
Price, each.....	$1.60	$2.75

Packing: Six in a box



Showing "Readable" Graduations
Figures staggered, easy to locate.



Showing End Graduations

Semi-Flexible Steel Rules

Machine Divided. Thickness: Approx. 1/50th Inch.

Semi-flexible, spring tempered Rules. Widths same as stiff (No. 2204R) Rules but of weight between those and our full flexible line. Edge, surface and end ground. Accurately graduated on both edges of both sides. Dark lines and figures, easy to read.

No. 2604R-E **Graduation No. 4:** 8ths, 16ths, 32nds, 64ths inch.
All lengths have **"Readable" and End Graduations:** 64ths numbered every 8th division; 32nds every 4th division and 32nds graduation across one end of each side.
Lengths: 6 and 12-inch only.

Length	6-inch	12-inch
Price, each	$1.60	$2.75
Approx. width	¾"	1"

No. 2607R **Graduation No. 7:** 16ths, 32nds, 64ths, 100ths inch.
All lengths have **"Readable" Graduations:** 64ths numbered every 8th division; 32nds every 4th division; 100ths every 10th division.
Lengths: 6 and 12-inch only.

Length	6-inch	12-inch
Price, each	$1.35	$2.50
Approx. width	¾"	1"

Narrow Steel Rules

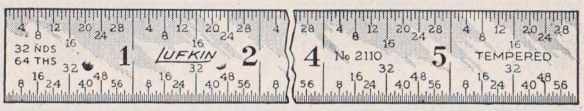
Machine Divided.
Approx. Size: 3/16ths Inch Wide; 3/64ths Inch Thick.

Spring tempered, stiff Rules, only 3/16ths inch wide, hence readily inserted in small openings. Edge, surface and end ground. Accurately graduated on one edge of each side. Clear, dark lines and figures.

No. 2310 **Narrow Steel Rule. Graduation No. 10:** 32nds and 64ths inch.
No. 2311 **Narrow Steel Rule. Graduation No. 11:** 64ths and 100ths inch.

Length	4-inch	6-inch	9-inch	12-inch
Price, each	$1.15	$1.35	$2.05	$2.50

Packing: Six in a box.



Showing "Readable" Graduations
Figures staggered, easy to locate.

Full Flexible Steel Rules

Machine Divided. Thickness: Approx. 1/64th Inch.

Thin and very flexible, spring tempered. Ground throughout. Dark markings, easy to read. Rules 12 inches and under are about ½ inch wide, others ¾ inch. *Marked one side only.*

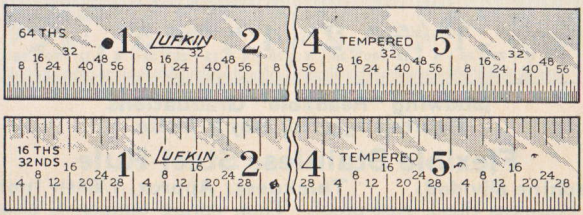
No. 2110 Graduation No. 10: 32nds and 64ths inch. **Lengths: 1 to 48 inches.**
"Readable" Graduations: 64ths numbered every 8th division.
32nds numbered every 4th division.

No. 2111R Graduation No. 11: 64ths and 100ths inch. **Lengths: 6 & 12 inch only;**
"Readable" Graduations: 64ths numbered every 8th division.
100ths numbered every 10th division.

No. 2112 Graduation No. 12: 50ths and 100ths inch. **Lengths: 6 & 12 inch only.**

Length, inches.	1	2	3	4	6	9	12	18	24	36	48
Price, each....	$.50	$.70	$.95	$1.15	$1.35	$2.05	$2.50	$4.00	$4.75	$10.50	$15.00

Packing: 12 inches and under, six in a box; others, one in a package.



Showing "Readable" Graduations
Figures staggered, easy to locate.

Full Flexible Steel Rule

Machine Divided. Marked Both Sides.
Approx. Size: 1/64th Inch Thick; ½ Inch Wide.

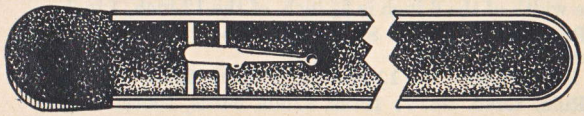
Thin, very flexible, spring tempered. Graduations most used are on lower edge; 64ths one side, 32nds other side. 16ths are on upper edge of 32nds side. Ground throughout and accurately graduated. Dark markings, easy to read.

Caution: This Rule being thin and graduated both sides, should not be bent too sharply.

No. 2110R 6-inch. **Graduation:** 16ths, 32nds, 64ths inch ..... Each **$1.35**
"Readable" Graduations: 64ths numbered every 8th division; 32nds numbered every 4th division.

Packing: Six in a box.

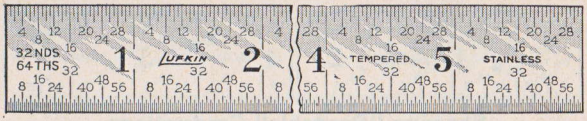
Rule Cases with Pocket Clip



Genuine Leather Rule Cases with metal-bound edges and having pocket clip or spring clasp. Made only for Rules 6 inches long.

Always Specify ½ or ¾ Inch.

Case With Clip. (For 6-inch Rules not over ½ inch wide)..... Each **$0.25**
Case With Clip. (For 6-inch Rules, ¾ inch wide)..... Each **0.25**



Showing "Readable" Graduations
Figures staggered, easy to locate.

Stainless Steel Rules

Machine Divided. Thickness: Approx. 3/64ths Inch.

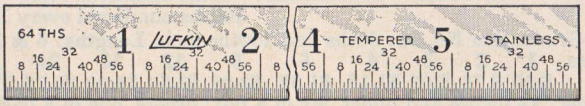
Genuine Stainless Steel, rust-proof. Otherwise same as No. 2204R, i.e. spring tempered, ground, accurately and clearly marked on both edges of both sides.

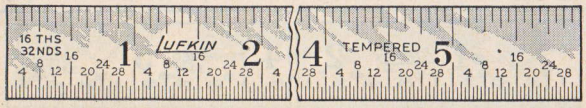
"Readable" Graduations: 64ths numbered every 8th division; 32nds every 4th division.

Graduation No. 4: 8ths, 16ths, 32nds, 64ths Inch.

No. S-2204R 6-inch Stainless Rule. Width: ¾ inch.....Each **$2.00**

No. S-2204R 12-inch Stainless Rule. Width: 1 inch.....Each **4.00**





Showing "Readable" Graduations
Figures staggered, easy to locate.

Flexible Stainless Steel Rule

Machine Divided. Thickness: Approx. 1/64th Inch.

Genuine Stainless Steel, rust-proof. Thin, spring tempered, clearly marked. Like No. 2110R this Rule has 64ths lower edge of one side; 32nds lower and 16ths upper edge of other side. Thus the two markings most used fall on lower edge.

"Readable" Graduations: 64ths numbered every 8th division; 32nds every 4th division.

Graduation: 16ths, 32nds, 64ths Inch.

No. S-2110R 6-inch Flexible Stainless Rule. Width: ½ inch.....Each **$2.00**

Beveled Steel Rules

Machine Divided. Thickness: Approx. 3/64ths Inch.

One Edge Beveled, Brings the Finest Graduation Close to the Work.

Spring tempered Rules, accurately ground and graduated. Dark markings, easy to read. Approximate width of the 6-inch is ¾ inch, of the 12-inch, 1 inch.

No. 2224 Beveled Steel Rule. **Grad. No. 4:** 8ths, 16ths, 32nds, 64ths inch. 64ths on the bevel.

6-inch.....Each **$1.35** 12-inch.....Each **$2.50**

No. 2227 Beveled Steel Rule. **Grad. No. 7:** 16ths, 32nds, 64ths, 100ths inch. 100ths on the bevel.

6-inch.....Each **$1.35** 12-inch.....Each **$2.50**

Packing: Six in a box.

Full Flexible Steel Rules

Decimal Graduations, Especially Suitable for the Aircraft Industry

Machine Divided. **Thickness: Approx. 1/64th Inch.**

Carrying 10ths and 100ths of an inch, these Rules eliminate converting fractions, hence are popular in aircraft and other plants using decimals. On opposite side they bear 32nds and 64ths inch. These are very flexible, spring tempered Rules, accurately ground and graduated. Lines and figures are dark, easy to read.

Caution: These Rules being thin and graduated both sides, should not be bent too sharply.

"Readable" Graduations Throughout: 10ths numbered every division; 100ths every 10th division; 32nds every 4th and 64ths every 8th division.

No. 5 Graduation: 32nds, 64ths, 10ths, 100ths inch

No. **2105R**	Length.....	6-inch	12-inch	18-inch	24-inch	36-inch
	Price, each.....	$1.35	$2.50	$4.00	$4.75	$10.50
	Approx. width...	½"	½"	¾"	¾"	¾"

Full Flexible Steel Rule

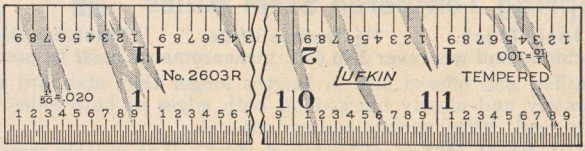
Machine Divided. Decimal Graduations. Thickness: Approx. 1/64th Inch.

Eliminates converting fractions to decimals. A very flexible, spring tempered Rule, accurately ground and graduated. Clear, dark lines and figures. Marked both edges of both sides. Width, approximately ½ inch.

Caution: This Rule being thin and graduated both sides, should not be bent too sharply.

"Readable" Graduations Throughout: 10ths numbered every division; 50ths every 5th division; 32nds every 4th and 64ths every 8th division.

No. 2103R 6-inch. **No. 3 Graduation:** 32nds, 64ths, 10ths, 50ths inch. Each **$1.35**



Semi-Flexible Steel Rule

Machine Divided. Decimal Graduations. Thickness: Approx. 1/50th Inch.

Facilitates measurements where decimal dimensions are required. Spring tempered, semi-flexible. Carefully ground and has clear, dark markings. Accurately graduated on both edges of both sides. Width, approximately 1 inch.

"Readable" Graduations Throughout (as described on rule above).

No. 2603R 12-inch. **No. 3 Graduation:** 32nds, 64ths, 10ths, 50ths inch. Each **$2.50**

Packing: Six in a box.

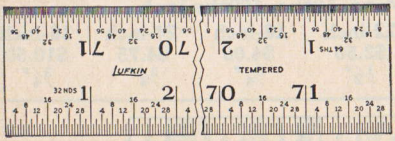
"Allen" Improved Steel Rule. (Semi-Flexible)

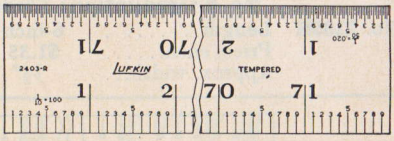
Easiest to Read. Machine Divided. Thickness: Approx. 1/50th Inch

Unique in its marking and numbering. Will measure to 64ths inch, yet its closest graduations are 1/32nd inch apart, and all odd 64ths are lines 1/16th inch apart, and, every one of these being numbered, it is the easiest of all Rules to read to 64ths.

One side is marked in the standard way, one edge 16ths, other edge 32nds inch, this taking care of all the even 64ths. Opposite side bears the odd 64ths only. Its one edge carries odd 64ths every fourth 64th commencing with 1, numbered 1, 5, 9, 13, etc., in each inch. Other edge bears the remaining odd 64ths, these being 3, 7, 11, 15, etc., and so numbered.

No. 2608 6-inch "Allen" Steel Rule. Width: ¾ inch.....Each **$1.35**



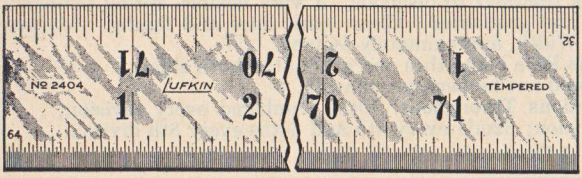


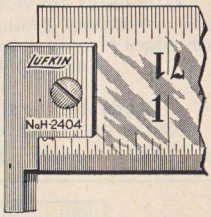
Heavy Spring Tempered Steel Rules

Machine Divided Thickness: Approx. 1/10th inch
"Readable" Graduations Throughout Width: 1½ inch

No. 2403R No. 3 Graduations: 32nds, 64ths, 10ths, 50ths inch.

Length.....	24-inch	36-inch	48-inch	60-inch	72-inch
Price, each...	$10.80	$20.50	$30.50	$40.50	$45.50





Heavy Spring Tempered Steel Rules

1/10th Inch Thick. 1½ Inches Wide. Machine Divided.
Popular in factories and wherever 3 to 6-ft. measurements must be precisely taken.

Wider, stiffer, and offered also in lengths longer than standard weight Steel Rules. Accurately and clearly marked on both edges of both sides. Prominent figures, easy to read. Edge, surface and end ground.

Hook of No. H-2404 is of hardened steel. It is quickly removed by giving eccentric stud a half turn, and the Rule is then for use, same as No. 2404. Hook can be set to extend from other edge.

All Have No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

Without Hook

No. 2404	24-inch	Each	$8.00
No. 2404	36-inch	Each	17.60
No. 2404	48-inch	Each	26.40
No. 2404	60-inch	Each	35.20
No. 2404	72-inch	Each	39.60

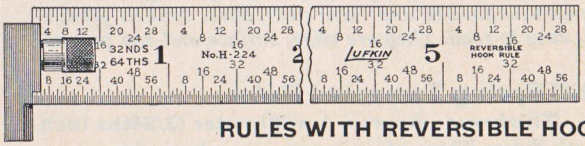
With Removable Hook

No. H-2404	24-inch	Each	$9.75
No. H-2404	36-inch	Each	19.35
No. H-2404	48-inch	Each	28.15
No. H-2404	60-inch	Each	36.95
No. H-2404	72-inch	Each	41.35

Hook Rules

Machine Divided, Spring Tempered Steel Rules of standard types, but with Hook. All Hooks of hardened steel, sturdy and set securely. All Rules accurately ground and graduated. Dark markings, easy to read. 4, 6, 9 and 12-inch Rules have zero of all markings at same end, so all measurements begin at inside of hook.

"Readable" Graduations—64ths numbered every 8th division, 32nds every 4th division.



Showing "Readable" Graduations Figures staggered, easy to locate.

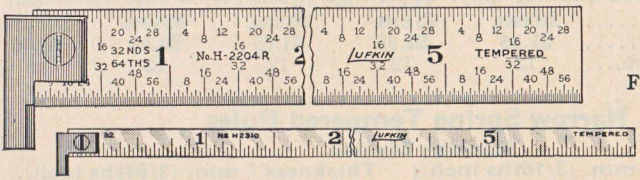
RULES WITH REVERSIBLE HOOK

Machine Divided. Thickness: Approx. 3/64ths Inch.

By loosening thumb screw until hook slot clears Rule, this Hook can, without removing any parts, be turned to the other edge of the rule, i.e., it can be set to read from zero on any of the 4 graduations. This shift requires no tool, and hook is securely set by hand also.

No. H-224 Hook Rule. Graduation No. 4: 8ths, 16ths, 32nds, 64ths inch. With "Readable" Graduations.

Length	6-inch	9-inch	12-inch
Price, each	$2.55	$3.25	$3.65
Approx. width rule	3/4"	7/8"	1"



Showing "Readable" Graduations Figures staggered, easy to locate.

RULES WITH REMOVABLE HOOK

By giving eccentric stud a half turn, this Hook is quickly and completely removed. The Rules are then for use, same as those without hook. Removed, this hook can be reversed, i.e. on the 4, 6, 9 and 12-inch lengths can be securely set to measure from zero on all graduations. Rules with this hook are offered in two widths.

Standard Width Rules With Removable Hook.

Machine Divided. Thickness: Approx. 3/64ths Inch.

No. H-2204R Hook Rule. Graduation No. 4: 8ths, 16ths, 32nds, 64ths inch. "Readable" Graduations on All Lengths.

Length	6-inch	9-inch	12-inch	18-inch	24-inch	36-inch
Price, each	$2.20	$2.90	$3.30	$4.90	$5.75	$11.50
Approx. width	3/4"	7/8"	1"	1 1/4"	1 1/4"	1 1/4"

Narrow Rules With Removable Hook.

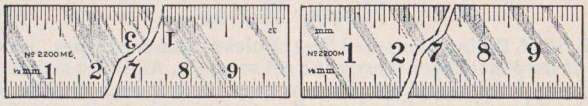
Machine Divided. 3/16ths Inch Wide. 3/64ths Inch Thick.

No. H-2310 Narrow Hook Rule. Graduation No. 10: 32nds and 64ths inch.

Length	4-inch	6-inch	9-inch	12-inch
Price, each	$1.90	$2.20	$2.90	$3.30

Packing: 12 inches and under, three in a box; others, one in a package.

NOTES: Heavy Steel Rules with Hook—See No. **H-2404**, page T112.
Hook Rules Marked Metric and English—Of types shown next page.
Specify as **H-2200M** and **ME**, **H-2300M** and **ME**. Prices same as rules marked English only.



Metric and Metric-English Steel Rules

All Rules listed on this page are of high grade, spring tempered steel. They are accurately machine divided and have clear, dark, sunken graduation lines and figures, easy to read. They are edge, surface and end ground.

Stiff Spring Tempered Rules

Machine Divided. **Thickness: Approx. 1 millimeter (3/64ths inch).**

No. 2200M Marked Both Sides: Three edges in mm., one edge in ½ mm.
No. 2200ME Marked Both Sides: One side mm., and 64ths inch; One side ½ mm., and 32nds inch.

Length	5 cm.	10 cm.	15 cm.	20 cm.	30 cm.	50 cm.	1 meter
Price, each	$0.85	$1.15	$1.35	$1.85	$2.50	$4.00	$15.00
Approx. width in mm.	12	15	18	21	24	32	32

Full Flexible Spring Tempered Rules

Machine Divided. **Thickness: Approx. 4/10ths mm. (1/64th inch).**

No. 2100M Marked One Side Only: Upper edge mm., lower edge ½ mm.
No. 2100ME Marked One Side Only: Upper edge ½ mm., lower edge 64ths inch.

Length	10 cm.	15 cm.	20 cm.	30 cm.	50 cm.
Price, each	$1.15	$1.35	$1.85	$2.50	$4.00
Approx. width in mm.	12	12	12	12	18

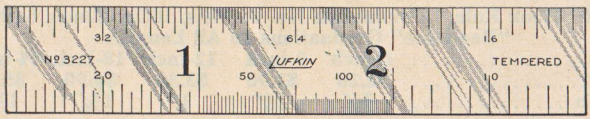
Narrow Spring Tempered Rules

Machine Divided.
Approx. Width 5 mm. (3/16ths inch); Thickness 1 mm. (3/64ths inch).

No. 2300M Marked Both Sides: One edge, one side mm., other side ½ mm.
No. 2300ME Marked Both Sides: One edge, one side ½ mm., other side 64ths inch.

Length	10 cm.	15 cm.
Price, each	$1.15	$1.35

Packing: 5, 10, 15, 20 and 30-cm. Rules...Six in a box.
50 cm. and 1-meter Rules.....One in a package.



English-Metric Spring Tempered Steel Rules

Machine Divided. **Thickness: Approx. 3/64ths Inch**

No. 3227 Marked: One side 16ths, 32nds, 64ths; 10ths, 20ths, 50ths, 100ths inch. Other side, one edge millimeters; other edge ½ millimeters.

Length: 6-inch. Width: ¾". Each **$1.35** **Length: 12-inch.** Width: 1". Each **$2.50**

Packing: 6 in a box

NOTES: Above Rules With Hook—See footnote on page T113.

Steel Shrink Rules

Graduations allow for the shrinkage indicated.

Machine Divided. Thickness: Approx. 3/64ths inch.
No. 4 Graduation: 8ths, 16ths, 32nds, 64ths Shrinkage Inch.
Always Specify Length as Well as Stock Number

No.	Shrink Per Ft.	No.	Shrink Per Ft.	No.	Shrink Per Ft.
83A	1/16 inch	**83G**	1/4 inch	**83P**	9/64 inch
83B	1/12 inch	**83H**	5/16 inch	**83R**	5/32 inch
83C	1/10 inch	**83J**	7/16 inch	**83S**	7/32 inch
83D	3/32 inch	**83K**	3/8 inch	**83T**	9/32 inch
83E	1/8 inch	**83L**	1/2 inch	**83W**	11/32 inch
83F	3/16 inch			**83Y**	13/32 inch

Length	*6-inch	12-inch	24-inch
Price, each	$1.50	$3.20	$6.40
Approx. width	3/4″	1″	1 1/4″

*6-Inch Rule, E, F and G Shrinks only.
Packing: 6 and 12-inch Rules, six in a box; 24-inch, one in a package.

No. 84 Series Steel Shrink Rules

Graduation No. 3: 10ths, 50ths, 32nds, 64ths Shrinkage Inch
Available in 12 and 24 inch lengths, and shrinks per foot as No. 83 Series
Prices: Same as No. 83 Series

Flexible Steel Shrink Rules

Machine Divided. Thickness: Approx. 1/64th Inch.
No. 10 Graduation: 32nds and 64ths Shrinkage Inch.
(Graduated one side only, lower edge 64ths, upper edge 32nds.)

No.	Shrink Per Ft.	Length	Width	Price, Each
2183E	1/8 inch	**6-inch only**	1/2 inch	$1.50
2183F	3/16 inch	**6-inch only**	1/2 inch	1.50

Metric Shrink Rules

1 inch wide, 3/64ths inch thick. Grad: 3 edges in mm., 1 edge 1/2 mm.
No. **83M** **30 cm.** Shrinkage of 1 mm. to 100 mm....Each $3.20
No. **83MM** **30 cm.** Shrinkage of 2 mm. to 100 mm....Each 3.20

Combination Square Blades Only—Shrink Graduation

Machine Divided
Fit heads of our standard 12-inch size Combination Squares.

Number		Shrink per Ft.	Length	Graduation	Price, Each
2583E	Shrink Blade	1/8 inch	**12-inch only**	8ths, 16ths, 32nds, 64ths inch	$4.20
2583F	Shrink Blade	3/16 inch	**12-inch only**	8ths, 16ths, 32nds, 64ths inch	4.20

Average Shrinkage of Castings.

Metal	Shrinkage per Foot	Metal	Shrinkage per Foot
Cast Iron	1/8 inch	Aluminum	3/16 inch
Malleable Iron	1/8 inch	Copper	3/16 inch
Steel	1/4 inch	Lead	5/16 inch
Brass	3/16 inch	Zinc	5/16 inch

Mechanics Steel Reference Tables

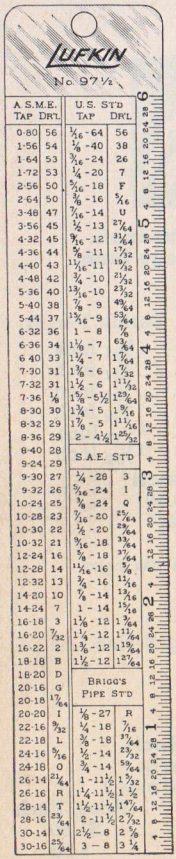


Fig. 1.

Carrying valuable information frequently required, these Tables are very handy for machinists, tool and die makers, in fact anyone referring to decimal equivalents, tap and drill sizes or wire gages. They are durable and permanently retain their legibility. Both Nos. 97½ and 98 serve well also as a 6-inch Scale.

Of flexible, spring tempered steel, 1¼x6¾ inches, with hole for hanging. Accurately ground and machine divided, with clear, dark figures and lines, easy to read.

"Readable" Graduations:

64ths numbered every 8th division;
32nds every 4th division.

No. 97½ Steel Reference Table and Rule . . . . . Each **$1.65**

Marked one side like Fig. 1:

Table of U.S., A.S.M.E., S.A.E. and Briggs Pipe Standard machine screw tap and drill sizes, including fractional and numbered sizes.

Also a 6-inch scale to 32nds inch.

Marked other side like Fig. 2:

Decimal equivalents of fractions from 1 to 63/64ths.

Also a 6-inch scale to 64ths inch.

No. 98 Steel Reference Table and Rule . . . . . Each **$1.65**

Marked one side like Fig. 2:

Decimal equivalents of fractions from 1 to 63/64ths.

Also a 6-inch scale to 64ths inch.

Marked other side:

Decimal equivalents of wire gages.

Also a 6-inch scale to 32nds inch.

NOTE: Leather Cases for 97½ & 98—Furnished at small extra charge.

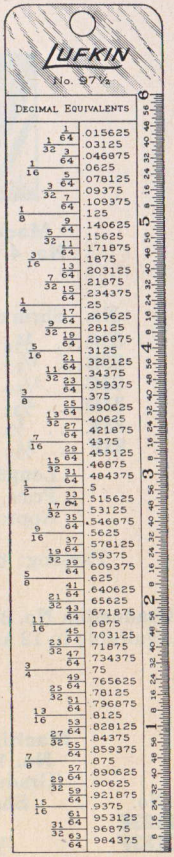
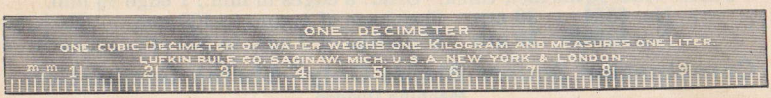


Fig. 2.



The Decimeter Rule

A Key to the Metric System.

1 Decimeter Long. 1 Centimeter Wide. 1 Millimeter Thick.

Gives a most comprehensive, visual demonstration of metric lengths. Of tempered steel, carefully ground. Accurately machine divided one edge, one side in centimeters and millimeters. Carries on both sides interesting facts regarding the metric system. Furnished with metal-bound leather case.

No. 99 Decimeter Rule with Case.

Length: 10 centimeters (1 decimeter) . . . . . Each **$1.00**

LUFKIN

GENERAL CATALOG No. 12

Illustrated and described on the following pages are several types of Lufkin Tape-Rules, Steel Tapes and Rules. For information on the complete line of Lufkin Measuring Tapes, Rules, etc., refer to Catalog No. 12-C, which includes the following and related items:

Steel Measuring Tapes (Chrome Clad and Nubian Finish)

Woven Measuring Tapes

Steel Tape Rules (Chrome Clad and Nickel Plated)

Boxwood Rules

Spring Joint Wood Rules

Folding Aluminum Rules

Misc. Rules, Wood, Steel and Brass

Glass Boards, Rules and Squares

Tailors Squares, Rules etc.

Lumber Rules

Boot Calks.

Catalog No. 12-C also covers the Precision Tools illustrated in this catalog No. 7 and will gladly be sent upon request to those interested in both Precision Tools and Measuring Tapes and Rules.

THE LUFKIN RULE CO.

Chrome Clad MEZURALL Tape-Rules

(Patented)

Manually Operated. Replaceable Blade ½ Inch Wide

Chrome Clad Line, The Outstanding Improvement of Years in Steel Tapes

Chrome Plated Blade Resists Rust and Corrosion.
Blade Is Metal Throughout, Surface Will Not Crack, Chip or Peel.
Markings Easy To Read, Jet Black Against Chrome-White Surface.
Sturdy, Heavily Plated Case of Improved Design,
With Flush Inset Side Plates in Red and White, Most Attractive.

For all types of accurate inside and outside measuring Self-Adjusting End Hook: With automatic sliding action, affords accurate butt-end and hooked-over measurements.

Blade is stiffened by concave forming, so will project unsupported, like a rule, therefore is ideal for inside measuring of openings, for extending to ceilings, etc. It will also flex to accurately measure circles and odd shapes. Blade is manually operated, runs smoothly out of and into case. and, having balanced construction, holds itself at any length withdrawn.

To take an inside measurement:

Butt square back edge of case against one side of opening being measured.

Extend the blade to the other limit. The sliding action of the patented hook assures accurate measuring.

Add 2 inches to the reading at case opening, case being 2 inches wide.
(This instruction is on case, as illustrated.)

Chrome Clad MEZURALL Tape-Rules

No.	Length	Markings, One Side Only.
C-926	6 foot	Blade Marked One Side, both edges, inches to 16ths. (First 6 inches upper edge to 32nds.)
C-928	8 foot	Marked same as above.
C-9210	10 foot	Marked same as above.

Replacement Blades

No.	RC6-6 ft.	RC8-8 ft.	RC10-10 ft.

MEZURALL Tape-Rules—Nickel Plated Blades

Same features and design as Mezurall described above but with flush inset side plate in blue and white.

No.	Length	Markings, One Side Only.
926	6 foot	Blade Marked One Side, both edges, inches to 16ths. (First 6 inches upper edge to 32nds.)
928	8 foot	Marked same as above.
9210	10 foot	Marked same as above.

Replacement Blades

No.	RN6-6 ft.	RN8-8 ft.	RN10-10 ft.

Chrome Clad WIZARD Junior Tape-Rules

(Patented)

Manually Operated. Replaceable Blade ½ Inch Wide

Chrome Clad Line, The Outstanding Improvement of Years in Steel Tapes

Chrome Plated Blade Resists Rust and Corrosion.
Blade Is Metal Throughout, Surface Will Not Crack, Chip or Peel.
Markings Easy To Read, Jet Black Against Chrome-White Surface.
Sturdy, Heavily Plated Case of Improved Type,
With Flush Inset Side Plates in Red and White, Most Attractive.

Self-Adjusting End Hook: With automatic sliding action, affords accurate butt-end and hooked-over measurements.

This is the very popular "Wizard Junior," but with Chrome-Clad Blade and improved case.

Blade is stiffened by concave forming, so will project unsupported, like a rule, to ceilings, walls, etc., yet it will also flex, like a tape, to accurately measure circles and odd shapes. Blade is manually operated, runs smoothly out of and into case, and, having balanced construction, holds itself at any length withdrawn. Reinforcement of case opening for blade adds life and protects blade.

Cases have flat edges with flush inset side plate in attractive red and white.

Chrome Clad WIZARD Junior Tape-Rules

Number	Length	Markings, One Side Only
C-1686	6 foot	Inches to 16ths, Both Edges (First 6 inches upper edge to 32nds)
C-1688	8 foot	Marked same as above

Replacement Blades

No.	RC6-6 ft.	RC8-8 ft.

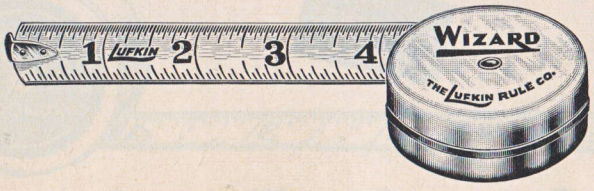
WIZARD Junior Tape-Rules—Nickel Plated Blades

Same features and design as Wizard Junior described above but with flush inset side plate in blue and white.

No.	Length	Markings, One Side Only
1686	6 foot	Blade Marked One Side, both edges, inches to 16ths.... (First 6 inches upper edge to 32nds.)
1688	8 foot	Marked same as above

Replacement Blades

No.	RN6-6 ft.	RN8-8 ft.



WIZARD Tape-Rules

(Patented)

Manually Operated. 5/8 Inch Wide Blade. Nickel Plated

Made in 6, 8 and 10-Foot Lengths.

WIZARD Is Moderately Priced, Popular in Shops and With Mechanics.

Handles nicely and has the durability required for constant use.

Wide blade permits large, easy-to-read figures.

Steel blade is stiffened by concave forming, so can be projected unsupported, like a rule, to walls, ceilings or into openings. It will also flex to accurately measure circles, around corners, etc.

Blade is nickel plated and has prominent, dark, contrasting lines and figures, easy to read. It is manually withdrawn from and returned to case, works smoothly and remains set at any length withdrawn. It has hook at first end, very handy for measuring within or beyond arms reach.

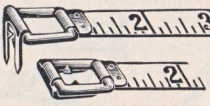
Sturdy, metal case is nickel plated and has flat edges. Diameter of six and eight-foot case is two inches.

WIZARD Tape-Rules

Markings, One Side Only.

No.	Length	
686	**6**-foot	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds)
688	**8**-foot	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds)
6810	**10**-foot	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds)
686D	**6** foot	Feet, 10ths and 100ths of feet upper edge. Feet, inches and 16ths on lower edge

With Standard Ring



EASY TO READ MARKINGS THAT ARE DURABLE

With Hook-Ring

"Anchor" Chrome Clad Steel Tapes

(Patented)

Markings Jet Black. Surface Satin Chrome-White.
Line 3/8 Inch Wide. Leather Case.
The Ideal Tape for General Use.

Easy to read. (*Large figures, prominent graduations extending to the very edge; both in sharp color contrast to glare-free surface.*)
Permanent markings. (*Strongly resist abrasion, heat, etc.*)
Rust and corrosion-resistant, sturdy line. (*Heavily chrome plated.*)
Surface of line will not chip, peel, or crack. (*Metal throughout.*)
Case is durable, practical and attractive.

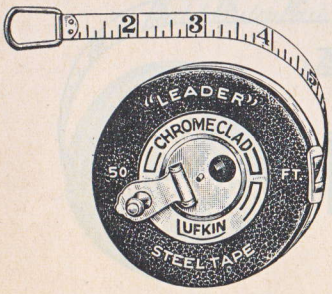
An accurate Steel Tape, with "Instantaneous" Readings. Case of finest genuine leather, mahogany color, closely hand-stitched over substantial metal liner which is rust-resistant coated. Folding flush handle opened by push pin.

Hook-Ring: Enables one to measure unassisted; tape suitable also for butt end measuring. Attached, sturdy, 2-pronged, metal hook folds flush against ring. Friction holds it open or closed. Spurs take firm hold, grip under tension, release themselves.

With Standard Ring.	Marked One Side Only.			
Feet, inches and 8ths . . . No.	**C-210**	**C-213**	**C-215**	**C-216**
Feet, 10ths and 100ths ft. No.	**C-210D**	**C-213D**	**C-215D**	**C-216D**
Length	25 Ft.	50 Ft.	75 Ft.	100 Ft.

With Hook-Ring.	Marked One Side Only.			
Feet, inches and 8ths . . . . . No.	**HC-210**	**HC-213**	**HC-215**	**HC-216**
Length	25 Ft.	50 Ft.	75 Ft.	100 Ft.

NOTES: Feet, Inches and 16ths—"Anchor" Tapes so marked, also available.

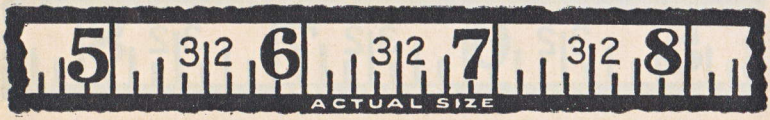


With Standard Ring

With Hook-Ring

"Leader" Chrome Clad Steel Tapes

(Patented)



Markings Jet Black. Surface Satin Chrome-White.
Line 3/8 Inch Wide. Red Vinyl Case.
The Popular Priced Chrome Clad Tape for General Uses.
Accurate. Serviceable. Attractive.

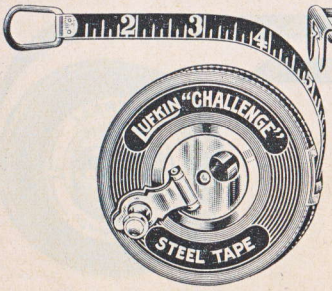
Easy to read. (*Large figures, prominent graduations extending to the very edge; both in sharp color contrast to glare-free surface.*)
Permanent markings. (*Strongly resist abrasion, heat, etc.*)
Rust and corrosion-resistant, sturdy line. (*Heavily chrome plated.*)
Surface of line will not chip, peel, or crack. (*Metal throughout.*)

In the "Leader," at its moderate price, we bring within the reach of every tape user the superior features of Chrome Clad Measuring Tapes, as detailed above. Line of standard weight. "Instantaneous" Readings. The case is a type that has proved highly satisfactory. It is of mottled Red Vinyl, and has 3/16-inch wide, flat, flush, Stainless Steel edge band. The sturdy case liner is of steel, rust-resistant coated. Folding flush handle is opened by push pin.

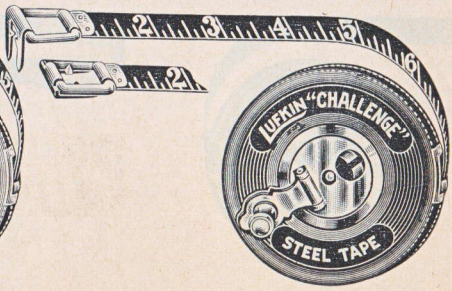
Hook-Ring: Enables one to measure unassisted; tape suitable also for butt end measuring. Attached, sturdy, 2-pronged, metal hook folds flush against ring. Friction holds it open or closed. Spurs take firm hold under tension, release themselves.

With Standard Ring.	Marked One Side Only.			
Feet, inches and 8ths.....No.	C-250	C-253	C-255	C-256
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.

With Hook-Ring.	Marked One Side Only.			
Feet, inches and 8ths.....No.	HC-250	HC-253	HC-255	HC-256
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.



With Standard Ring



With Hook-Ring

"Challenge" Steel Tapes

"Nubian" (Black) Finish

Line 3/8 Inch Wide. Leather Case.
A Standard, High Grade, General Purpose Tape.

Through many years of dependable service in construction and other work, "Challenge" Tapes have become a recognized standard.

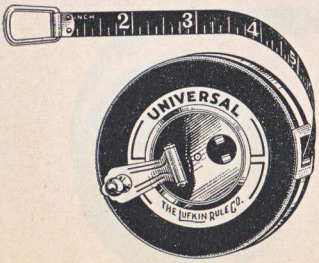
Raised markings in natural steel over black background, a finish that wears and looks well. "Instantaneous" Readings. Case of brown, genuine leather, closely hand-stitched over sturdy, metal liner, which is rust-resistant coated. Folding flush handle is opened by push pin.

Hook-Ring: Enables one to measure unassisted; tape suitable also for butt end measuring. Attached, sturdy, 2-pronged, metal hook folds flush against ring. Friction holds it open or closed. Spurs take firm hold, grip under tension, release themselves.

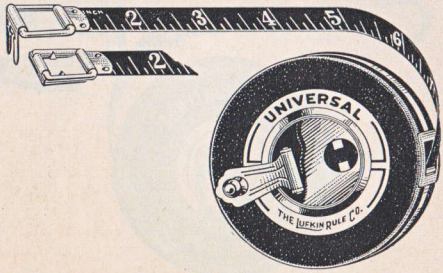
With Standard Ring.	Marked One Side Only.				
Feet, inches and 8ths . . No.	**260**	**263**	**265**	**266**	**267**
Feet, 10ths and 100ths ft. No.	**260D**	**263D**	**265D**	**266D**	**267D**
Length	25 Ft.	50 Ft.	75 Ft.	100 Ft.	150 Ft.

With Hook-Ring.	Marked One Side Only.				
Feet, inches and 8ths . . No.	**H-260**	**H-263**	**H-265**	**H-266**	**H-267**
Length	25 Ft.	50 Ft.	75 Ft.	100 Ft.	150 Ft.

NOTES: Feet, Inches and 16ths—"Challenge" Tapes so marked, also available. Links on Back—Furnished at small extra charge. Specify as 260L.



With Standard Ring



With Hook-Ring

"Universal" Steel Tapes

"Nubian" (Black) Finish

Line 3/8 Inch Wide. Case Vinyl Covered.
Our Low Priced, Long Steel Tape.
Accurate. Sturdy. Standard Pattern.

The popular priced "Universal" has brought within the reach of all the accuracy of a Steel Tape, which is now essential to every mechanic in the building trades and to many others. This Tape has standard weight line and a neat, substantial case.

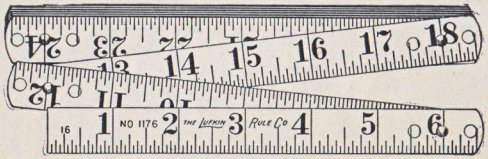
Line has raised markings in natural steel over black background. "Instantaneous" Readings. Durable and good looking case of mottled Red Vinyl over metal liner, which is rust-resistant coated. The 3/16 inch wide, stainless steel edge band of case is flat and flush inset. Folding flush handle opened by push pin.

Hook-Ring. Enables one to measure unassisted; tape suitable also for butt end measuring. Attached, sturdy, 2-pronged, metal hook folds flush against ring. Friction holds it open or closed. Spurs take firm hold, grip under tension, release themselves.

With Standard Ring.	Marked One Side Only.			
Feet, inches and 8ths.....No.	540	543	545	546
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.

With Hook-Ring.	Marked One Side Only.			
Feet, inches and 8ths.....No.	H-540	H-543	H-545	H-546
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.

Mechanics Folding Steel Rules



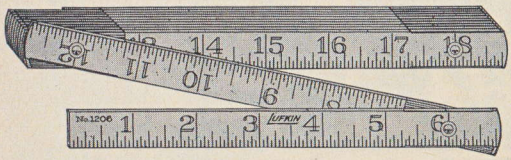
¾ Inch Wide. **Six-inch Folds.** **Lock Joints.**

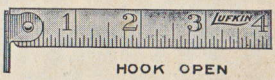
Popular in steel mills, machine shops and wherever lighter weight metal rules and wood rules are often broken. These are tempered steel rules, 1/32 inch thick. Each joint has substantial rivet headed over washers and two durable stops or snap sockets, holding sections rigidly in alignment when rule is open and when closed. Lines and figures are deeply sunken and black, in good contrast, easy to read and permanent. (On very precise work a one-piece steel scale should be used.)

Marked Both Sides, Lower Edge, Inches to 16ths.

No. 1173	3 foot.	Folding Steel Rule.	6-inch sections.
No. 1174	4 foot.	Folding Steel Rule.	6-inch sections.
No. 1175	5 foot.	Folding Steel Rule.	6-inch sections.
No. 1176	6 foot.	Folding Steel Rule.	6-inch sections.
No. 1178	8 foot.	Folding Steel Rule.	6-inch sections.

Aluminum Rules





HOOK OPEN

HOOK CLOSED

9/16 Inch Wide. **Six-inch Folds.** **Solid Brass Joints.**

Aluminum Rules, being durable and holding their length well are popular in construction work and in mills, shops, etc. They have solid brass joints, hence are rustproof throughout. Our Aluminum Rules are of a special hardness, therefore hold their shape. The sunken and black graduation marks and large figures are in good contrast, easy to read. Solid brass spring joints properly hold sections in alignment, open and closed. The joints have rivet headed over flush embedded washers, and thus securely hold rule to length.

Patented Folding Hook: Optional on our Aluminum Rules. Ideal on work beyond arms reach and handy in any measuring. A small, sturdy, one-piece, metal hook of superior type, most securely attached. Friction holds it open and closed. Zero falls at inside of open hook, at extreme end of Rule when hook is folded.

All Rules Below Are Marked Consecutive Inches to 16ths, Both Sides.

Rules with OUTSIDE Markings

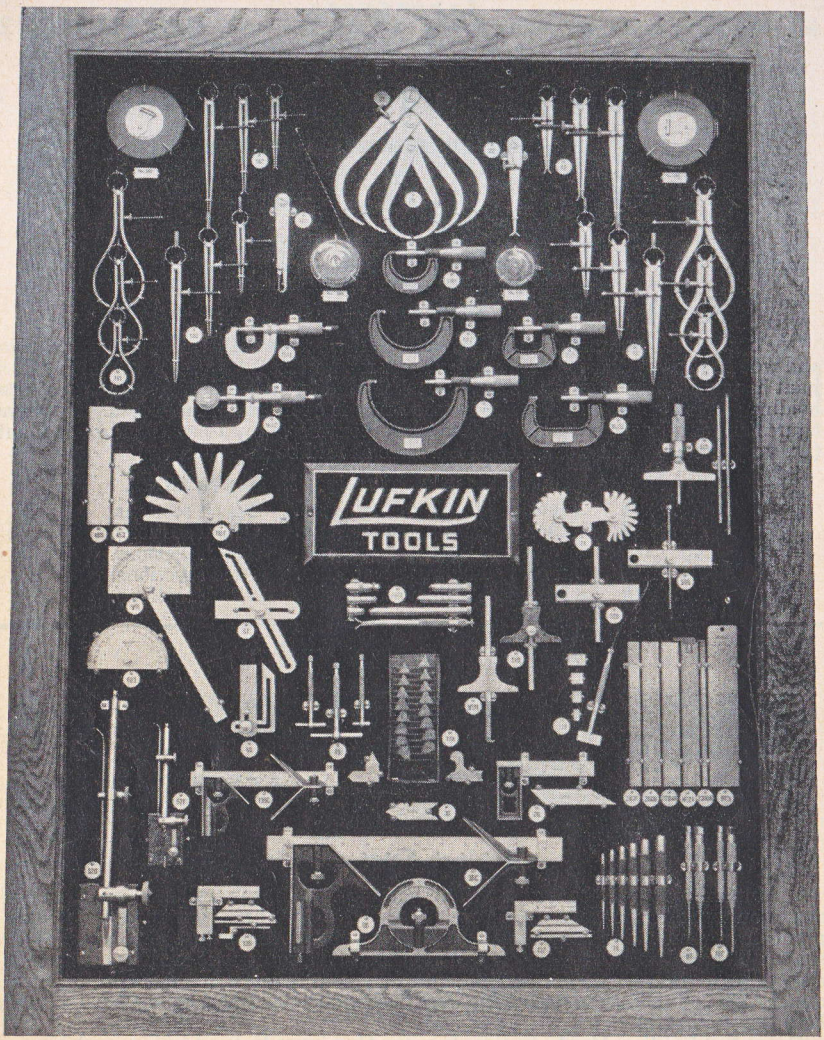
(Numbering begins on outside of rule)

No. 1206	6 foot.	Aluminum Rule, Without Hook
No. H-1206	6 foot.	Aluminum Rule, With Hook

Rules With INSIDE or FLAT Markings

(Numbering begins on inside of rule)
(Measurement is close to the work even when rule is but partly open.)

No. 1206F	6 foot.	Aluminum Rule, Without Hook



DISPLAY CASES and PANELS of PRECISION TOOLS

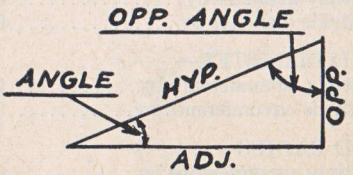
As an aid to Dealers we are pleased to mount our Tools in Display Cases or on Panels. We are prepared to build such fixtures to fit the wall or other space available. We also mount goods on fixtures sent us by the Dealer.

The Tools to appear in display may be selected by the Dealer to meet his requirements, or if desired we will make the selections. We gladly also make up Combination Displays of Precision Tools and Measuring Tapes and Rules. We nicely arrange and securely mount the items.

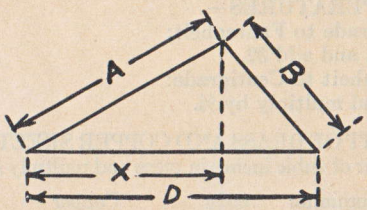
Cases can be furnished with hinged door fitted for glass and with lock, to keep the goods in best condition.

THESE MAKE PERMANENT DISPLAYS, PROMOTING SALES

Table for Solving Right Angled Triangles



PARTS GIVEN	PARTS TO BE FOUND				
	Hyp.	Adj.	Opp.	Angle	Opp. Angle
Hyp. & Adj.	———	———	$\sqrt{\text{Hyp.}^2-\text{Adj.}^2}$	Cos. $=\frac{\text{Adj.}}{\text{Hyp.}}$	Sin. $=\frac{\text{Adj.}}{\text{Hyp.}}$
Hyp. & Opp.	———	$\sqrt{\text{Hyp.}^2-\text{Opp.}^2}$	———	Sin. $=\frac{\text{Opp.}}{\text{Hyp.}}$	Cos. $=\frac{\text{Opp.}}{\text{Hyp.}}$
Hyp. & Angle	———	Hyp. x Cos.	Hyp. x Sin.	———	90°-Angle
Adj. & Opp.	$\sqrt{\text{Adj.}^2+\text{Opp.}^2}$	———	———	Tan. $=\frac{\text{Opp.}}{\text{Adj.}}$	Cot. $=\frac{\text{Opp.}}{\text{Adj.}}$
Adj. & Angle	$\frac{\text{Adj.}}{\text{Cos.}}$	———	Adj. x Tan.	———	90°-Angle
Opp. & Angle	$\frac{\text{Opp.}}{\text{Sin.}}$	Opp. x Cot.	———	———	90°-Angle



When A, B & D Are Given $X=\frac{D^2+A^2-B^2}{2D}$

USEFUL RULES

TO FIND CIRCUMFERENCE—
Multiply diameter by.....3.1416
Or divide diameter by.....0.3183

TO FIND DIAMETER—
Multiply circumference by.....0.3183
Or divide circumference by.....3.1416

TO FIND RADIUS—
Multiply circumference by.....0.15915
Or divide circumference by.....6.28318

TO FIND SIDE OF AN INSCRIBED SQUARE—
Multiply diameter by.....0.7071
Or multiply circumference by.....0.2251
Or divide circumference by.....4.4428

TO FIND SIDE OF AN EQUAL SQUARE—
Multiply diameter by.....0.8862
Or divide diameter by.....1.1284
Or multiply circumference by.....0.2821
Or divide circumference by.....3.545

SQUARE—
A side multiplied by 1.4142 equals diameter of its circumscribing circle.
A side multiplied by 4.443 equals circumference of its circumscribing circle.
A side multiplied by 1.128 equals diameter of an equal circle.
A side multiplied by 3.547 equals circumference of an equal circle.

TO FIND THE AREA OF A CIRCLE—
Multiply circumference by one-quarter of the diameter.
Or multiply the square of diameter by.....0.7854
Or multiply the square of circumference by.....07958
Or multiply the square of ½ diameter by.....3.1416

TO FIND THE SURFACE OF A SPHERE OR GLOBE—
Multiply the diameter by the circumference.
Or multiply the square of diameter by.....3.1416
Or multiply four times the square of radius by.....3.1416

TO FIND THE CUBIC INCHES (VOLUME) IN A SPHERE OR GLOBE—
Multiply the cube of the diameter by .5236.

TO CONVERT TEMPERATURES—
To convert Centigrade to Fahrenheit:
Multiply by 9/5 and add 32.
To convert Fahrenheit to Centigrade:
Subtract 32 and multiply by 5/9.

TO FIND THE WEIGHT OF BRASS AND COPPER SHEETS, RODS AND BARS—
Ascertain the number of cubic inches in piece and multiply same by weight per cubic inch.

Aluminum	.0924	Copper	.3184
Brass	.2960	Steel	.2816

Or multiply the length by the breadth (in feet) and product by weight in pounds per square foot.

Decimal Equivalents of 8ths, 16ths, 32nds and 64ths of an inch

8ths

$\frac{1}{8} = .125$

$\frac{1}{4} = .250$

$\frac{3}{8} = .375$

$\frac{1}{2} = .500$

$\frac{5}{8} = .625$

$\frac{3}{4} = .750$

$\frac{7}{8} = .875$

16ths

$\frac{1}{16} = .0625$

$\frac{3}{16} = .1875$

$\frac{5}{16} = .3125$

$\frac{7}{16} = .4375$

$\frac{9}{16} = .5625$

$\frac{11}{16} = .6875$

$\frac{13}{16} = .8125$

$\frac{15}{16} = .9375$

32nds

$\frac{1}{32} = .03125$

$\frac{3}{32} = .09375$

$\frac{5}{32} = .15625$

$\frac{7}{32} = .21875$

$\frac{9}{32} = .28125$

$\frac{11}{32} = .34375$

$\frac{13}{32} = .40625$

$\frac{15}{32} = .46875$

$\frac{17}{32} = .53125$

$\frac{19}{32} = .59375$

$\frac{21}{32} = .65625$

$\frac{23}{32} = .71875$

$\frac{25}{32} = .78125$

$\frac{27}{32} = .84375$

$\frac{29}{32} = .90625$

$\frac{31}{32} = .96875$

64ths

$\frac{1}{64} = .015625$

$\frac{3}{64} = .046875$

$\frac{5}{64} = .078125$

$\frac{7}{64} = .109375$

$\frac{9}{64} = .140625$

$\frac{11}{64} = .171875$

$\frac{13}{64} = .203125$

$\frac{15}{64} = .234375$

$\frac{17}{64} = .265625$

$\frac{19}{64} = .296875$

$\frac{21}{64} = .328125$

$\frac{23}{64} = .359375$

$\frac{25}{64} = .390625$

$\frac{27}{64} = .421875$

$\frac{29}{64} = .453125$

$\frac{31}{64} = .484375$

$\frac{33}{64} = .515625$

$\frac{35}{64} = .546875$

$\frac{37}{64} = .578125$

$\frac{39}{64} = .609375$

$\frac{41}{64} = .640625$

$\frac{43}{64} = .671875$

$\frac{45}{64} = .703125$

$\frac{47}{64} = .734375$

$\frac{49}{64} = .765625$

$\frac{51}{64} = .796875$

$\frac{53}{64} = .828125$

$\frac{55}{64} = .859375$

$\frac{57}{64} = .890625$

$\frac{59}{64} = .921875$

$\frac{61}{64} = .953125$

$\frac{63}{64} = .984375$

Decimal Equivalents of Millimeters

Mm.	Inches	Mm.	Inches	Mm.	Inches	Mm.	Inches
.1	.00394	4.4	.17322	8.7	.34251	13.	.51181
.2	.00787	4.5	.17716	8.8	.34645	13.1	.51574
.3	.01181	4.6	.18110	8.9	.35039	13.2	.51968
.4	.01575	4.7	.18503	9.	.35433	13.3	.52362
.5	.01968	4.8	.18897	9.1	.35826	13.4	.52755
.6	.02362	4.9	.19291	9.2	.36220	13.5	.53149
.7	.02756	5.	.19685	9.3	.36614	13.6	.53543
.8	.03149	5.1	.20078	9.4	.37007	13.7	.53936
.9	.03543	5.2	.20472	9.5	.37401	13.8	.54330
1.	.03937	5.3	.20866	9.6	.37795	13.9	.54724
1.1	.04330	5.4	.21259	9.7	.38188	14.	.55118
1.2	.04724	5.5	.21653	9.8	.38582	14.1	.55511
1.3	.05118	5.6	.22047	9.9	.38976	14.2	.55905
1.4	.05512	5.7	.22440	10.	.39370	14.3	.56299
1.5	.05905	5.8	.22834	10.1	.39763	14.4	.56692
1.6	.06299	5.9	.23228	10.2	.40157	14.5	.57086
1.7	.06692	6.	.23622	10.3	.40551	14.6	.57480
1.8	.07086	6.1	.24015	10.4	.40944	14.7	.57873
1.9	.07480	6.2	.24409	10.5	.41338	14.8	.58267
2.	.07874	6.3	.24803	10.6	.41732	14.9	.58661
2.1	.08267	6.4	.25196	10.7	.42125	15.	.59055
2.2	.08661	6.5	.25590	10.8	.42519	15.5	.61023
2.3	.09055	6.6	.25984	10.9	.42913	16.	.62992
2.4	.09448	6.7	.26377	11.	.43307	16.5	.64960
2.5	.09842	6.8	.26771	11.1	.43700	17.	.66929
2.6	.10236	6.9	.27165	11.2	.44094	17.5	.68897
2.7	.10629	7.	.27559	11.3	.44488	18.	.70866
2.8	.11023	7.1	.27952	11.4	.44881	18.5	.72834
2.9	.11417	7.2	.28346	11.5	.45275	19.	.74803
3.	.11811	7.3	.28740	11.6	.45669	19.5	.76771
3.1	.12204	7.4	.29133	11.7	.46062	20.	.78740
3.2	.12598	7.5	.29527	11.8	.46456	20.5	.80708
3.3	.12992	7.6	.29921	11.9	.46850	21.	.82677
3.4	.13385	7.7	.30314	12.	.47244	21.5	.84645
3.5	.13779	7.8	.30708	12.1	.47637	22.	.86614
3.6	.14173	7.9	.31102	12.2	.48031	22.5	.88582
3.7	.14566	8.	.31496	12.3	.48425	23.	.90551
3.8	.14960	8.1	.31889	12.4	.48818	23.5	.92519
3.9	.15354	8.2	.32283	12.5	.49212	24.	.94488
4.	.15748	8.3	.32677	12.6	.49606	24.5	.96456
4.1	.16141	8.4	.33070	12.7	.49999	25.	.98425
4.2	.16535	8.5	.33464	12.8	.50393	25.5	1.00393
4.3	.16929	8.6	.33858	12.9	.50787	26.	1.02362

Decimal Equivalents of Number Size Drills

No.	Size of Drill in Inches	No.	Size of Drill in Inches	No.	Size of Drill in Inches	No.	Size of Drill in Inches
1	0.2280	21	0.1590	41	0.0960	61	0.0390
2	0.2210	22	0.1570	42	0.0935	62	0.0380
3	0.2130	23	0.1540	43	0.0890	63	0.0370
4	0.2090	24	0.1520	44	0.0860	64	0.0360
5	0.2055	25	0.1495	45	0.0820	65	0.0350
6	0.2040	26	0.1470	46	0.0810	66	0.0330
7	0.2010	27	0.1440	47	0.0785	67	0.0320
8	0.1990	28	0.1405	48	0.0760	68	0.0310
9	0.1960	29	0.1360	49	0.0730	69	0.0292
10	0.1935	30	0.1285	50	0.0700	70	0.0280
11	0.1910	31	0.1200	51	0.0670	71	0.0260
12	0.1890	32	0.1160	52	0.0635	72	0.0250
13	0.1850	33	0.1130	53	0.0595	73	0.0240
14	0.1820	34	0.1110	54	0.0550	74	0.0225
15	0.1800	35	0.1100	55	0.0520	75	0.0210
16	0.1770	36	0.1065	56	0.0465	76	0.0200
17	0.1730	37	0.1040	57	0.0430	77	0.0180
18	0.1695	38	0.1015	58	0.0420	78	0.0160
19	0.1660	39	0.0995	59	0.0410	79	0.0145
20	0.1610	40	0.0980	60	0.0400	80	0.0135

Decimal Equivalents of Letter Size Drills

Letter	Size of Drill in Inches	Letter	Size of Drill in Inches	Letter	Size of Drill in Inches	Letter	Size of Drill in Inches
Z	0.413	S	0.348	L	0.290	E	0.250
Y	0.404	R	0.339	K	0.281	D	0.246
X	0.397	Q	0.332	J	0.277	C	0.242
W	0.386	P	0.323	I	0.272	B	0.238
V	0.377	O	0.316	H	0.266	A	0.234
U	0.368	N	0.302	G	0.261	.....	.....
T	0.358	M	0.295	F	0.257	.....	.....

Basic Screw Thread Dimensions and Tap Drill Sizes of American National Coarse and Fine Thread Series

Screw Size	Threads per Inch		Basic Dimensions in Inches				Commercial Tap Drill to Produce Approx. 75% Full Thread		Body Drill	Decimal Equiv.
	N C Coarse Thread Series	N F Fine Thread Series	Major Diameter	Pitch Diameter	Single Depth of Thread	Minor or Root Diameter	Tap Drill	Decimal Equiv.		
0	.....	80	.060	.0519	.00812	.0438	3/64	.0469	52	.0635
1	64	.....	.073	.0629	.01015	.0527	53	.0595	47	.0785
1	.....	72	.073	.0640	.00902	.0550	53	.0595	47	.0785
2	56	.....	.086	.0744	.01160	.0628	50	.0700	42	.0935
2	.....	64	.086	.0759	.01015	.0657	50	.0700	42	.0935
3	48	.....	.099	.0855	.01353	.0719	47	.0785	37	.1040
3	.....	56	.099	.0874	.01160	.0758	45	.0820	37	.1040
4	40	.....	.112	.0958	.01624	.0795	43	.0890	31	.1200
4	.....	48	.112	.0985	.01353	.0849	42	.0935	31	.1200
5	40	.....	.125	.1088	.01624	.0925	38	.1015	29	.1360
5	.....	44	.125	.1102	.01476	.0955	37	.1040	29	.1360
6	32	.....	.138	.1177	.02030	.0974	36	.1065	27	.1440
6	.....	40	.138	.1218	.01624	.1055	33	.1130	27	.1440
8	32	.....	.164	.1437	.02030	.1234	29	.1360	18	.1695
8	.....	36	.164	.1460	.01804	.1279	29	.1360	18	.1695
10	24	.....	.190	.1629	.02706	.1359	25	.1495	9	.1960
10	.....	32	.190	.1697	.02030	.1494	21	.1590	9	.1960
12	24	.....	.216	.1889	.02706	.1619	16	.1770	2	.2210
12	.....	28	.216	.1928	.02320	.1696	14	.1820	2	.2210
1/4	20	.....	.2500	.2175	.03248	.1850	7	.2010	.....	.....
1/4	.....	28	.2500	.2268	.02320	.2036	3	.2130	.....	.....
5/16	18	.....	.3125	.2764	.03608	.2403	F	.2570	.....	.....
5/16	.....	24	.3125	.2854	.02706	.2584	I	.2720	.....	.....
3/8	16	.....	.3750	.3344	.04059	.2938	5/16	.3125	.....	.....
3/8	.....	24	.3750	.3479	.02706	.3209	Q	.3320	.....	.....
7/16	14	.....	.4375	.3911	.04639	.3447	U	.3680	.....	.....
7/16	.....	20	.4375	.4050	.03248	.3725	25/64	.3906	.....	.....
1/2	13	.....	.5000	.4500	.04996	.4001	27/64	.4219	.....	.....
1/2	.....	20	.5000	.4675	.03248	.4350	29/64	.4531	.....	.....
9/16	12	.....	.5625	.5084	.05413	.4542	31/64	.4844	.....	.....
9/16	.....	18	.5625	.5264	.03608	.4903	33/64	.5156	.....	.....
5/8	11	.....	.6250	.5660	.05905	.5069	17/32	.5313	.....	.....
5/8	.....	18	.6250	.5889	.03608	.5528	37/64	.5781	.....	.....
3/4	10	.....	.7500	.6850	.06495	.6201	21/32	.6562	.....	.....
3/4	.....	16	.7500	.7094	.04059	.6688	11/16	.6875	.....	.....
7/8	9	.....	.8750	.8028	.07217	.7307	49/64	.7656	.....	.....
7/8	.....	14	.8750	.8286	.04639	.7822	13/16	.8125	.....	.....
1	8	.....	1.0000	.9188	.08119	.8376	7/8	.8750	.....	.....
1	.....	14	1.0000	.9536	.04639	.9072	15/16	.9375	.....	.....
1 1/8	7	.....	1.1250	1.0322	.09279	.9394	63/64	.9844	.....	.....
1 1/8	.....	12	1.1250	1.0709	.05413	1.0167	1 3/64	1.0469	.....	.....
1 1/4	7	.....	1.2500	1.1572	.09279	1.0644	1 7/64	1.1094	.....	.....
1 1/4	.....	12	1.2500	1.1959	.05413	1.1417	1 11/64	1.1719	.....	.....
1 3/8	6	.....	1.3750	1.2667	.10825	1.1585	1 7/32	1.2188	.....	.....
1 3/8	.....	12	1.3750	1.3209	.05413	1.2667	1 19/64	1.2969	.....	.....
1 1/2	6	.....	1.5000	1.3917	.10825	1.2835	1 11/32	1.3438	.....	.....
1 1/2	.....	12	1.5000	1.4459	.05413	1.3917	1 27/64	1.4219	.....	.....
1 3/4	5	.....	1.7500	1.6201	.12990	1.4902	1 9/16	1.5625	.....	.....
2	4 1/2	.....	2.0000	1.8557	.14434	1.7113	1 25/32	1.7813	.....	.....

N C=American National Coarse Thread Series.

N F=American National Fine Thread Series.

PITCH DIAMETER=Major diameter minus single depth of thread.

SINGLE DEPTH OF THREAD=.6495÷Number of threads per inch.

TAP DRILL: To find the diameter of a tap drill that will allow approximately 75% full thread, subtract the pitch (which is 1÷number of threads per inch) from the major diameter. The result will be the diameter of the drill. Select the drill nearest to this size.

Different Standards for Wire Gauges in Use in the United States

Dimensions of Sizes in Decimal Parts of an Inch

Number of Wire Gage	American or B. & S.	Birmingham or Stubs' Iron Wire	Washburn & Moen, Worcester, Mass.	W.& M. Steel Music Wire	New American S. & W. Co.'s Music Wire Gage	Imperial Wire Gage	Stubs' Steel Wire	U. S. Standard Gage for Sheet and Plate Iron and Steel	Number of Wire Gage
00000000	.....	.....	.....	.0083	.....	.....	.....	.....	00000000
0000000	.....	.....	.....	.0087	.....	.....	.....	.....	0000000
000000	.....	.....	.....	.0095	.004	.464	.....	.46875	000000
00000	.....	.....	.....	.010	.005	.432	.....	.4375	00000
0000	.460	.454	.3938	.011	.006	.400	.....	.40625	0000
000	.40964	.425	.3625	.012	.007	.372	.....	.375	000
00	.3648	.380	.3310	.0133	.008	.348	.....	.34375	00
0	.32486	.340	.3065	.0144	.009	.324	.....	.3125	0
1	.2893	.300	.2830	.0156	.010	.300	.227	.28125	1
2	.25763	.284	.2625	.0166	.011	.276	.219	.265625	2
3	.22942	.259	.2437	.0178	.012	.252	.212	.250	3
4	.20431	.238	.2253	.0188	.013	.232	.207	.234375	4
5	.18194	.220	.2070	.0202	.014	.212	.204	.21875	5
6	.16202	.203	.1920	.0215	.016	.192	.201	.203125	6
7	.14428	.180	.1770	.023	.018	.176	.199	.1875	7
8	.12849	.165	.1620	.0243	.020	.160	.197	.171875	8
9	.11443	.148	.1483	.0256	.022	.144	.194	.15625	9
10	.10189	.134	.1350	.027	.024	.128	.191	.140625	10
11	.090742	.120	.1205	.0284	.026	.116	.188	.125	11
12	.080808	.109	.1055	.0296	.029	.104	.185	.109375	12
13	.071961	.095	.0915	.0314	.031	.092	.182	.09375	13
14	.064084	.083	.0800	.0326	.033	.080	.180	.078125	14
15	.057068	.072	.0720	.0345	.035	.072	.178	.0703125	15
16	.05082	.065	.0625	.036	.037	.064	.175	.0625	16
17	.045257	.058	.0540	.0377	.039	.056	.172	.05625	17
18	.040303	.049	.0475	.0395	.041	.048	.168	.050	18
19	.03589	.042	.0410	.0414	.043	.040	.164	.04375	19
20	.031961	.035	.0348	.0434	.045	.036	.161	.0375	20
21	.028462	.032	.03175	.046	.047	.032	.157	.034375	21
22	.025347	.028	.0286	.0483	.049	.028	.155	.03125	22
23	.022571	.025	.0258	.051	.051	.024	.153	.028125	23
24	.0201	.022	.0230	.055	.055	.022	.151	.025	24
25	.0179	.020	.0204	.0586	.059	.020	.148	.021875	25
26	.01594	.018	.0181	.0626	.063	.018	.146	.01875	26
27	.014195	.016	.0173	.0658	.067	.0164	.143	.0171875	27
28	.012641	.014	.0162	.072	.071	.0149	.139	.015625	28
29	.011257	.013	.0150	.076	.075	.0136	.134	.0140625	29
30	.010025	.012	.0140	.080	.080	.0124	.127	.0125	30
31	.008928	.010	.0132	.....	.085	.0116	.120	.0109375	31
32	.00795	.009	.0128	.....	.090	.0108	.115	.01015625	32
33	.00708	.008	.0118	.....	.095	.0100	.112	.009375	33
34	.006304	.007	.0104	.....	.....	.0092	.110	.00859375	34
35	.005614	.005	.0095	.....	.....	.0084	.108	.0078125	35
36	.005	.004	.0090	.....	.....	.0076	.106	.00703125	36
37	.004453	.....	.....	.....	.....	.0068	.103	.006640625	37
38	.003965	.....	.....	.....	.....	.0060	.101	.00625	38
39	.003531	.....	.....	.....	.....	.0052	.099	.....	39
40	.003144	.....	.....	.....	.....	.0048	.097	.....	40

Three-Wire Measurement of Pitch Diameter of Screw Threads

Various methods of measuring the pitch diameter of a thread, such as thread micrometers, ball point micrometers and with three wires, are commonly employed. Of the various methods which have been tried, the three-wire method has been found to be the most accurate and satisfactory when properly carried out.

Following are the formulas for use with Screw Thread Micrometer Calipers and the Three-Wire System.

For 60° Sharp V and American National Forms.

(Am. Nat'l formerly called **U. S. Standard**)

D = Outside diameter of screw.

N = Number of threads per inch.

P = Pitch of thread. . . . . $= \frac{1.000}{N}$

S = Single depth of V thread. . . . . $= \frac{.8660}{N}$

S = Single depth of U. S. Std. thread . . $= \frac{.6495}{N}$

D' = Pitch diameter of thread. . . . . = D—S

WD = Wire diameter. . . . . = P x .57735

DW = Diameter over wire. . . . . = (D—S) + (.86602 x P)

When selecting Wire other than correct size touching on pitch line, it should be the nearest size larger, using the following formula:

$DW = (WD \times 3) - (P \times .866025) + D'$.

Table of Pitch Diameters For Metric Standard of Screw Threads

Size mm.	Pitch		Size mm.	Pitch	
	Intl. Std.	French Std.		Intl. Std.	French Std.
2	.45	.50	20	2.50	2.50
3	.55	.50	22	2.50	2.50
4	.70	.75	24	3.00	3.00
5	.85	.75	26	....	3.00
6	1.00	1.00	27	3.00	....
7	1.00	1.00	28	....	3.00
8	1.25	1.00	30	3.50	3.50
9	1.25	1.00	32	....	3.50
10	1.50	1.50	33	3.50	3.50
11	1.50	....	34	....	3.50
12	1.75	1.50	36	4.00	4.00
14	2.00	2.00	38	....	4.00
16	2.00	2.00	39	4.00	....
18	2.50	2.50	40	....	4.00

Double Depth of Threads

Threads per Inch	Double Depth U. S. Standard Thread	Double Depth Sharp V Thread	Double Depth Whitworth Standard Thread	Threads per Inch	Double Depth U. S. Standard Thread	Double Depth Sharp V Thread	Double Depth Whitworth Standard Thread
2¼	0.5774	0.7698	0.5692	30	0.0433	0.0577	0.0427
2⅜	0.5470	0.7293	0.5392	32	0.0406	0.0541	0.0400
2½	0.5196	0.6928	0.5123	34	0.0382	0.0509	0.0377
2⅝	0.4949	0.6598	0.4879	36	0.0361	0.0481	0.0356
2¾	0.4724	0.6298	0.4657	38	0.0342	0.0456	0.0337
2⅞	0.4518	0.6025	0.4454	40	0.0325	0.0433	0.0320
3	0.4330	0.5774	0.4269	42	0.0309	0.0412	0.0305
3¼	0.3997	0.5329	0.3940	44	0.0295	0.0394	0.0291
3½	0.3712	0.4949	0.3659	46	0.0282	0.0377	0.0278
4	0.3248	0.4330	0.3202	48	0.0271	0.0361	0.0267
4½	0.2887	0.3849	0.2846	50	0.0260	0.0346	0.0256
5	0.2598	0.3464	0.2561	52	0.0250	0.0333	0.0246
5½	0.2362	0.3149	0.2328	54	0.0241	0.0321	0.0237
6	0.2165	0.2887	0.2134	56	0.0232	0.0309	0.0229
7	0.1856	0.2474	0.1830	58	0.0224	0.0299	0.0221
8	0.1624	0.2165	0.1601	60	0.0217	0.0289	0.0213
9	0.1443	0.1925	0.1423	62	0.0209	0.0279	0.0206
10	0.1299	0.1732	0.1281	64	0.0203	0.0271	0.0200
11	0.1181	0.1575	0.1164	66	0.0197	0.0263	0.0194
12	0.1083	0.1443	0.1067	68	0.0191	0.0255	0.0188
13	0.0999	0.1332	0.0985	70	0.0185	0.0248	0.0183
14	0.0928	0.1237	0.0915	72	0.0180	0.0241	0.0178
15	0.0866	0.1155	0.0854	74	0.0175	0.0234	0.0173
16	0.0812	0.1083	0.0800	76	0.0171	0.0228	0.0167
18	0.0722	0.0962	0.0711	78	0.0167	0.0222	0.0164
20	0.0650	0.0866	0.0640	80	0.0162	0.0217	0.0160
22	0.0590	0.0787	0.0582	82	0.0158	0.0211	0.0156
24	0.0541	0.0722	0.0534	84	0.0155	0.0206	0.0152
26	0.0500	0.0666	0.0493	86	0.0151	0.0201	0.0148
27	0.0481	0.0642	0.0474	88	0.0148	0.0196	0.0145
28	0.0464	0.0619	0.0457	90	0.0144	0.0192	0.0142

Double Depth for U. S. Standard Thread..... ... $= \frac{1.299}{N}$

Double Depth for Sharp V Thread ..... $= \frac{1.732}{N}$

Double Depth for Whitworth Standard Thread ..... $= \frac{1.281}{N}$

Weight of Square and Round Bars of Steel

In Pounds Per Lineal Foot

Based on 489.6 lbs. per cubic foot.

For Wrought Iron deduct 2 per cent. For High-Speed Steel add 11 per cent.

Thickness or Diameter, Inches	Weight of Square Bar 1 foot long	Weight of Round Bar 1 foot long	Thickness or Diameter, Inches	Weight of Square Bar 1 foot long	Weight of Round Bar 1 foot long
1/32	.0033	.0026	3	30.60	24.03
1/16	.0133	.0104	3 1/8	33.20	26.08
1/8	.0531	.0417	3 1/4	35.92	28.20
3/16	.1195	.0938	3 3/8	38.73	30.42
1/4	.2123	.1669	3 1/2	41.65	32.71
5/16	.3333	.2608	3 5/8	44.68	35.09
3/8	.4782	.3756	3 3/4	47.82	37.56
7/16	.6508	.5111	3 7/8	51.05	40.10
1/2	.8500	.6676	4	54.40	42.73
9/16	1.076	.8449	4 1/4	61.41	48.24
5/8	1.328	1.043	4 1/2	68.85	54.07
11/16	1.608	1.262	4 3/4	76.71	60.25
3/4	1.913	1.502	5	85.00	66.76
13/16	2.245	1.763	5 1/4	93.72	73.60
7/8	2.603	2.044	5 1/2	102.8	80.77
15/16	2.989	2.347	5 3/4	112.4	88.29
1	3.400	2.670	6	122.4	96.14
1 1/16	3.838	3.014	6 1/4	132.8	104.3
1 1/8	4.303	3.379	6 1/2	143.6	112.8
1 3/16	4.795	3.766	6 3/4	154.9	121.7
1 1/4	5.312	4.173	7	166.6	130.9
1 5/16	5.857	4.600	7 1/4	178.7	140.4
1 3/8	6.428	5.019	7 1/2	191.3	150.2
1 7/16	7.026	5.518	7 3/4	204.2	160.3
1 1/2	7.650	6.008	8	217.6	171.0
1 9/16	8.301	6.520	8 1/4	231.4	181.8
1 5/8	8.978	7.051	8 1/2	245.6	193.0
1 11/16	9.682	7.604	8 3/4	260.3	204.4
1 3/4	10.41	8.178	9	275.4	216.3
1 13/16	11.17	8.773	9 1/4	291.1	228.5
1 7/8	11.95	9.388	9 1/2	306.8	241.0
1 15/16	12.76	10.02	9 3/4	323.2	253.9
2	13.60	10.68	10	340.0	267.0
2 1/8	15.35	12.06	10 1/4	357.2	280.6
2 1/4	17.22	13.52	10 1/2	374.9	294.4
2 3/8	19.18	15.07	10 3/4	392.9	308.6
2 1/2	21.25	16.69	11	411.4	323.1
2 5/8	23.43	18.40	11 1/4	430.3	337.9
2 3/4	25.00	20.20	11 1/2	449.6	353.1
2 7/8	28.10	22.07	11 3/4	469.4	368.6

To Compute The Weight Of Sheet Steel:

Multiply the thickness by 40.8; the result is the weight in pounds per square foot.

Example: A piece of Sheet Steel is .005″ thick,
its weight is .005 x 40.8 = .204 lbs. per square foot.

To Compute The Weight Of Sheet Iron:

Multiply the thickness by 40; the result is the weight in pounds per square foot.

Example: A piece of Sheet Iron is .005″ thick,
its weight is .005 x 40 = .200 lbs. per square foot.

Weight of Iron and Steel Sheets

Thickness by Birmingham Gage				Thickness by American (or B. & S.) Gage			
No. of Gage	Thickness, Inches	Weight per Sq. Ft.		No. of Gage	Thickness, Inches	Weight per Sq. Ft.	
		Iron	Steel			Iron	Steel
0000	.454	18.16	18.52	0000	.46	18.40	18.77
000	.425	17.00	17.34	000	.4096	16.38	16.71
00	.38	15.20	15.30	00	.3648	14.59	14.88
0	.34	13.60	13.87	0	.3249	13.00	13.26
1	.3	12.00	12.24	1	.2893	11.57	11.80
2	.284	11.36	11.59	2	.2576	10.30	10.51
3	.259	10.36	10.57	3	.2294	9.18	9.36
4	.238	9.52	9.71	4	.2043	8.17	8.34
5	.22	8.80	8.98	5	.1819	7.28	7.42
6	.203	8.12	8.28	6	.1620	6.48	6.61
7	.18	7.20	7.34	7	.1443	5.77	5.89
8	.165	6.60	6.73	8	.1285	5.14	5.24
9	.148	5.92	6.04	9	.1144	4.58	4.67
10	.134	5.36	5.47	10	.1019	4.08	4.16
11	.12	4.80	4.90	11	.0907	3.63	3.70
12	.109	4.36	4.45	12	.0808	3.23	3.30
13	.095	3.80	3.88	13	.0720	2.88	2.94
14	.083	3.32	3.39	14	.0641	2.56	2.62
15	.072	2.88	2.94	15	.0571	2.28	2.33
16	.065	2.60	2.65	16	.0508	2.03	2.07
17	.058	2.32	2.37	17	.0453	1.81	1.85
18	.049	1.96	2.00	18	.0403	1.61	1.64
19	.042	1.68	1.71	19	.0359	1.44	1.46
20	.035	1.40	1.43	20	.0320	1.28	1.31
21	.032	1.28	1.31	21	.0285	1.14	1.16
22	.028	1.12	1.14	22	.0253	1.01	1.03
23	.025	1.00	1.02	23	.0226	.904	.922
24	.022	.88	.898	24	.0201	.804	.820
25	.02	.80	.816	25	.0179	.716	.730
26	.018	.72	.734	26	.0159	.636	.649
27	.016	.64	.653	27	.0142	.568	.579
28	.014	.56	.571	28	.0126	.504	.514
29	.013	.52	.530	29	.0113	.452	.461
30	.012	.48	.490	30	.0100	.400	.408
31	.01	.40	.408	31	.0089	.356	.363
32	.009	.36	.367	32	.0080	.320	.326
33	.008	.32	.326	33	.0071	.284	.290
34	.007	.28	.286	34	.0063	.252	.257
35	.005	.20	.204	35	.0056	.224	.228

Specific gravity.....Iron 7.7.....Steel 7.854
Weight per cubic foot.....Iron 480.....Steel 489.6
Weight per cubic inch.....Iron .2778.....Steel .2833

As many gages differ, and even the thickness of a certain specified gage is not assumed the same by all manufacturers, orders for sheets and wires should always state the weight per square foot or the thickness in thousandths of an inch.

United States Standard Gage
For Sheet and Plate Iron and Steel

Number of Gage	Approximate thickness in fractions of an inch	Approximate thickness in decimal part of an inch	Weight per square foot in ounces avoirdupois	Weight per square foot in pounds avoirdupois
0000000	1/2	.5	320	20.00
000000	15/32	.46875	300	18.75
00000	7/16	.4375	280	17.50
0000	13/32	.40625	260	16.25
000	3/8	.375	240	15.00
00	11/32	.34375	220	13.75
0	5/16	.3125	200	12.50
1	9/32	.28125	180	11.25
2	17/64	.265625	170	10.625
3	1/4	.25	160	10.00
4	15/64	.234375	150	9.375
5	7/32	.21875	140	8.75
6	13/64	.203125	130	8.125
7	3/16	.1875	120	7.5
8	11/64	.171875	110	6.875
9	5/32	.15625	100	6.25
10	9/64	.140625	90	5.625
11	1/8	.125	80	5.00
12	7/64	.109375	70	4.375
13	3/32	.09375	60	3.75
14	5/64	.078125	50	3.125
15	9/128	.0703125	45	2.8125
16	1/16	.0625	40	2.5
17	9/160	.05625	36	2.25
18	1/20	.05	32	2.
19	7/160	.04375	28	1.75
20	3/80	.0375	24	1.50
21	11/320	.034375	22	1.375
22	1/32	.03125	20	1.25
23	9/320	.028125	18	1.125
24	1/40	.025	16	1.
25	7/320	.021875	14	.875
26	3/160	.01875	12	.75
27	11/640	.0171875	11	.6875
28	1/64	.015625	10	.625
29	9/640	.0140625	9	.5625
30	1/80	.0125	8	.5
31	7/640	.0109375	7	.4375
32	13/1280	.01015625	6½	.40625
33	3/320	.009375	6	.375
34	11/1280	.00859375	5½	.34375
35	5/640	.0078125	5	.3125
36	9/1280	.00703125	4½	.28125
37	17/2560	.006640625	4¼	.265625
38	1/160	.00625	4	.25
39	15/2560	.005859375	3¾	.234375
40	7/1280	.00546875	3½	.21875
41	27/5120	.0052734375	3⅜	.2109375
42	13/2560	.005078125	3¼	.203125
43	25/5120	.0048828125	3⅛	.1953125
44	3/640	.0046875	3	.1875

29° Screw Thread

Acme Standard

The various parts of the 29° screw thread, Acme Standard, are obtained as follows:

$$\text{Width of point of tool for screw or tap thread} = \frac{.3707}{\text{Threads per Inch}} - .0052$$

$$\text{Width of screw or nut thread} = \frac{.3707}{\text{Threads per Inch}}$$

$$\text{Diameter of tap} = \text{Diameter of screw} + .020$$

$$\text{Diameter of tap or screw at root} = \text{Diameter of screw} - \left(\frac{1}{\text{Threads per In.}} + .020\right)$$

$$\text{Depth of thread} = \frac{1}{2 \times \text{Threads per Inch}} + .010$$

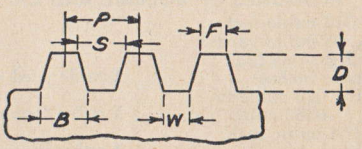


Table of Thread Parts

	D	F	W	S	B
Threads per Inch	Depth of Thread	Width of Flat at Top of Tooth	Width of Flat at Bottom of Thread	Width of Space Between Top of Teeth	Width of Tooth at Root
1	.5100	.3707	.3655	.6293	.6345
1⅓	.3851	.2781	.2729	.4721	.4773
1½	.3433	.2471	.2419	.4196	.4248
1¾	.2957	.2118	.2066	.3596	.3648
2	.2600	.1854	.1802	.3146	.3198
2½	.2100	.1483	.1431	.2517	.2569
3	.1767	.1236	.1184	.2097	.2149
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0530	.0478	.0898	.0950
8	.0725	.0463	.0411	.0787	.0839
9	.0656	.0412	.0360	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681
12	.0517	.0309	.0257	.0524	.0576

Surveyors or Land Measure

1 Link =7.92 inches.
1 Rod (or Pole) =25 links =16½ feet.
1 Chain =100 links =4 rods =66 feet.
1 Furlong =40 rods =10 chains =⅛ mile.
1 Mile =320 rods =5,280 feet.
1 Acre =160 square rods = 43,560 square feet.
1 Square Mile =640 acres.

The Metric System

MEASURES OF LENGTH

10 millimeters (mm.) =1 centimeter .cm.
10 centimeters =1 decimeter.....dm.
10 decimeters =1 meter.....m.
10 meters =1 dekameter.....Dm.
10 dekameters =1 hektometer. Hm.
10 hektometers =1 kilometer..Km.

1 meter = { 39.37 inches. / 3.28083 feet. / 1.0936 yards. }
1 centimeter =.3937 inch.
1 millimeter = { .03937 inch, or / approximately 1/25 inch. }
1 kilometer =0.62137 mile.

1 foot =.3048 meter.
1 inch = { 2.54 centimeters. / 25.4 millimeters. }

MEASURES OF SURFACE

1 square meter = { 10.764 square feet. / 1.196 square yards. }
1 square centimeter =.155 square inch.
1 square millimeter =.00155 sq. inch.

1 square yard =.836 square meter.
1 square foot =.0929 square meter.
1 square inch = { 6.452 sq. centimeters. / 645.2 sq. millimeters. }

MEASURES OF VOLUME AND CAPACITY

1 cubic meter = { 35.314 cubic feet. / 1.308 cubic yards. / 264.2 gallons (231 cubic inches). }
1 cubic decimeter = { 61.023 cubic in. / .0353 cubic feet. }
1 cubic centimeter =.061 cubic inch.
1 liter = { 1 cubic decimeter. / 61.023 cubic inches. / .0353 cubic foot. / 1.0567 quarts (U. S.). / .2642 gallon (U. S.). / 2.202 lbs. of water at 62° F. }

1 cubic yard =.7645 cubic meter.
1 cubic foot = { .02832 cubic meter. / 28.317 cubic decimeters. / 28.317 liters. }
1 cubic in. =16.393 cubic centimeters.
1 gallon (British) =4.543 liters.
1 gallon (U. S.) =3.785 liters.

MEASURES OF WEIGHT

1 gram =15.432 grains.
1 kilogram =2.2046 pounds.
1 metric ton = { .9842 ton of 2240 lbs / 19.68 cwts. / 2204.6 lbs. }

1 grain =.0648 gram.
1 ounce avoirdupois =28.35 grams.
1 pound =.4536 kilogram.
1 ton of 2240 lbs. = { 1.016 metric ton. / 1016 kilograms. }

Miscellaneous

1 kilogram per meter =.6720 pounds per foot.
1 gram per square millimeter =1.422 pounds per square inch.
1 kilogram per square meter =0.2084 pounds per square foot.
1 kilogram per cubic meter =.0624 pounds per cubic foot.
1 degree centigrade =1.8 degrees Fahrenheit.
1 pound per foot =1.488 kilograms per meter.
1 pound per square foot =4.882 kilograms per square meter.
1 pound per cubic foot=16.02 kilograms per cubic meter.
1 degree Fahrenheit=.5556 degrees centigrade.
1 Calorie (French Thermal Unit) =3.968 B. T. U. (British Thermal Unit).
1 Horse Power = { 33,000 foot pounds per minute. / 746 Watts. }

1 Watt (Unit of Electrical Power) = { .00134 Horse Power. / 44.22 foot pounds per minute. }
1 Kilowatt = { 1000 Watts. / 1.34 Horse Power. / 44,220 foot pounds per minute. }

Alphabetical Index

ALPHABETICAL INDEX—Continued

Numerical Index

Letter suffixes of stock numbers (such as A, B, M, ME, V and others) are not all shown in this index. Items having numbers with letter suffixes and not here shown will be found on the page here appearing opposite the number. For example: Micrometer No. 611-V is on page indicated for stock No. 611: Combination Sets Nos. 525M and 525ME are on page indicated for stock No. 525 etc.

NUMERICAL INDEX—Continued

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12
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