



# OPTICAL MEASURING & GRAPHIC TOOLS

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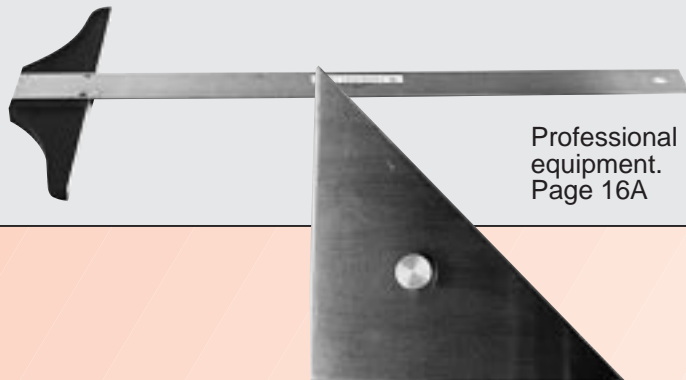
Flashlight magnifiers  
for low light areas.  
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Hands free inspection.  
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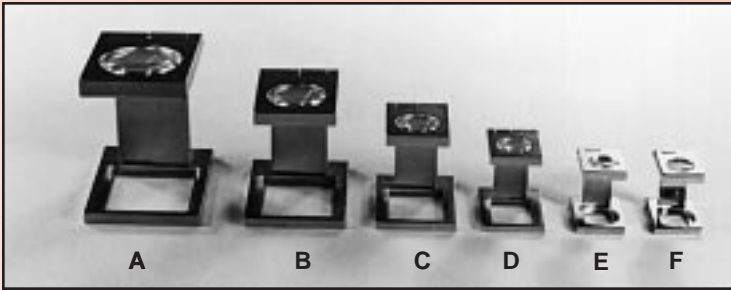
Professional layout  
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# Magnifiers

## Linen Testers and Stand Magnifiers - 3x to 12x

### Linen Testers

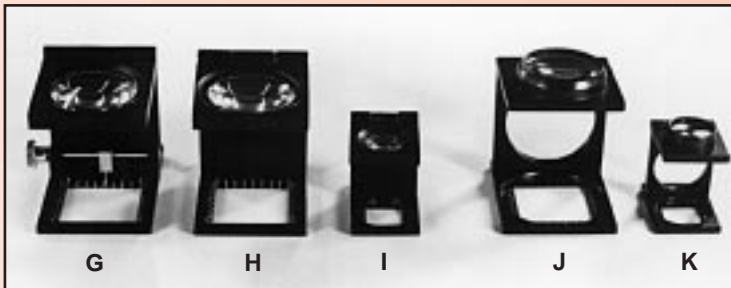
#### Metal - Chrome and Gold Finish



Single high quality German optically ground biconvex silicate glass lenses mounted in dull chrome plated brass housings. **F** Model LNS-0006A is finished with highly polished genuine gold plating and is supplied with a leather case.

	Lens Diameter	Cut out base size	Magnifying Power	Order Number	Price
A	1.125"	1.13" x 1.13"	5x	LNS-0001A	
B	0.750"	1.00" x 1.00"	6x	LNS-0002A	
C	0.500"	0.75" x 0.75"	8x	LNS-0003A	
D	0.438"	0.44" x 0.44"	10x	LNS-0004A	
E	0.375"	0.38" x 0.38"	12x	LNS-0005A	
F	0.375"	0.38" x 0.38"	12x	LNS-0006A	
Optional Leatherette Case, 2.5" x 2.5". Fits - A, B, C, D, and E.				LNS-0100A	

#### Metal - Black Finish



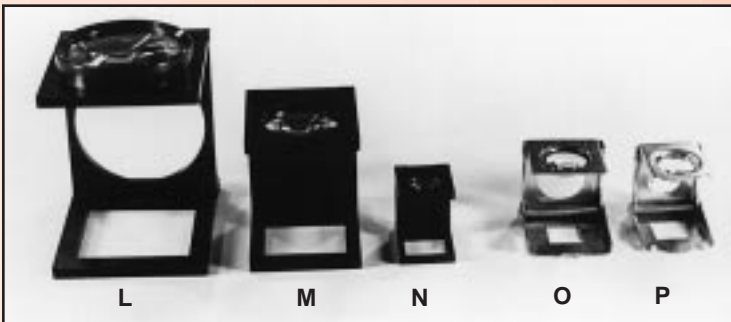
Black finish metal housings with double or single glass lens systems. All feature cut out bases graduated in 1/8" except **J** Model LNS-0015A which is graduated in 1/8" and mm. **G** Model LNS-0010A incorporates a micrometer counter. Two inch Model LNS-0017A, not shown, is of the same design as **J**.

	Lens Dia. (Number)	Cut out base size	Magnifying Power	Order Number	Price
G	1.125" (1)	1.00" x 1.00"	6x	LNS-0010A	
H	1.125" (1)	1.00" x 1.00"	6x	LNS-0011A	
I	0.500" (1)	0.50" x 0.50"	8x	LNS-0012A	
J	1.000" (2)	1.00" x 1.00"	6x	LNS-0015A	
K	0.500" (2)	0.50" x 0.50"	9x	LNS-0016A	
Optional Leatherette Case, 2.5" x 2.5". Fits - G, H, I, J, and K.				LNS-0100A	

Not Shown

-	2.000" (2)	2.00" x 2.00"	3x	LNS-0017A	
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#### Plastic - Black Finish, Metal - "Snap Open"



Inexpensive black plastic linen testers. Ideal for use in the darkroom and where other corrosive chemicals are used. **L** Model LNS-0030A has a double lens system. **M** and **N** Models LNS-0031A and LNS-0032A have bases graduated in mm.

	Lens Diameter	Cut out base size	Magnifying Power	Order Number	Price
L	1.500"	1.88" x 1.88"	4x	LNS-0030A	
M	0.125"	1.25" x 1.25"	5x	LNS-0031A	
N	0.500"	0.63" x 0.63"	10x	LNS-0032A	
Optional Leatherette Case, 2.5" x 2.5". Fits - M & N only.				LNS-0100A	

Spring loaded snap open linen testers.

**O** 0.625" diameter 10x lens with a 0.50" x 0.50" cut out base graduated in 1/4". Brass finish. Supplied complete with leather case.

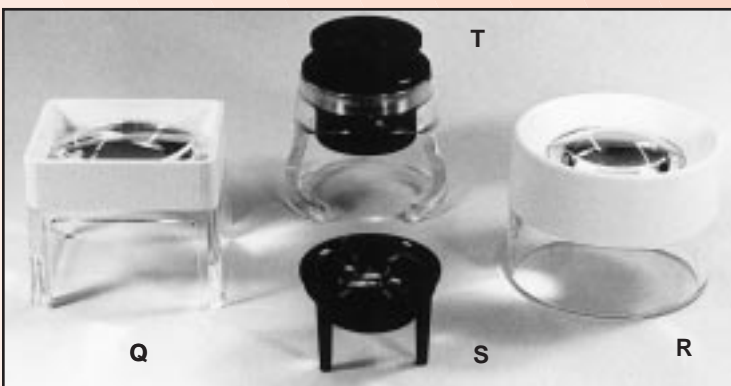
Order No.: LNS-0040A

**P** 0.563" diameter 8x lens with a 0.50" x 0.50" cut out base graduated in 1/8". Chrome finish. Order No.: LNS-0041A

Optional Leatherette Case, 2.5" x 2.5". Fits - Model P.

Order No.: LNS-0100A

### Stand Magnifiers



**Q** PXM lens with a duplex coating. Clear acrylic base. Available in two sizes:

4.00" x 3.00", 3x. Order No.: ONS-0001A

2.75" x 2.25", 4x. Order No.: ONS-0002A

**R** The same as **Q** above but 2.50" diameter, 4x. Order No.: ONS-0003A

**S** A 7.25x Tripod magnifier with a 1.25" diameter two lens system. Focus on this magnifier is adjustable. Order No.: ONS-0010A

**T** A 6x 220 degree cut away base magnifier with a 1.50" diameter double achromatic lens system for color correction and a wide field of view. Aluminum lens holder with focusing ring and a clear acrylic base.

Order No.: ONS-0020A

### Giant Linen Tester

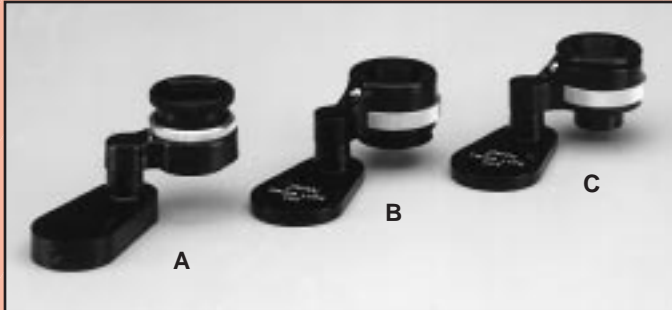


**U** A giant foldable magnifier incorporating a four inch diameter 3x glass lens mounted in a sturdy plastic housing which folds flat for storage and portability. The four inch by four inch cut out base is graduated in 1/16" and millimeters. A good unit for opaquing and other light table tasks. Overall size 5.25" x 6" x 7.5". Order No.: LNS-0033A

# Magnifiers

Magnifiers 5x to 30x

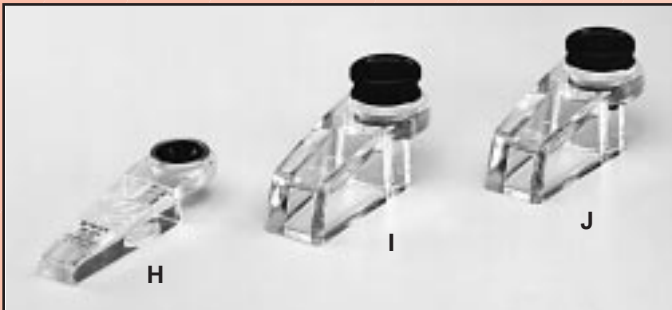
## Swing Base Magnifiers



The highest quality swing base magnifiers. The lenses rotate around the base for easy viewing and may be used to inspect film without touching the film. Units may be worked under for opaquing, etc. Units are stable and will not tip. All models feature an adjustable focusing ring.

- A** 0.688" lens diameter, 12x. Order No.: ONS-0030A
  - B** 0.625" lens diameter, 15x. Order No.: ONS-0031A (Includes Leather Case)
  - C** 0.625" lens diameter, 22x. Order No.: ONS-0032A (Includes Leather Case)
- Also available in: 9x. Order No.: ONS-0033A  
6x. Order No.: ONS-0034A

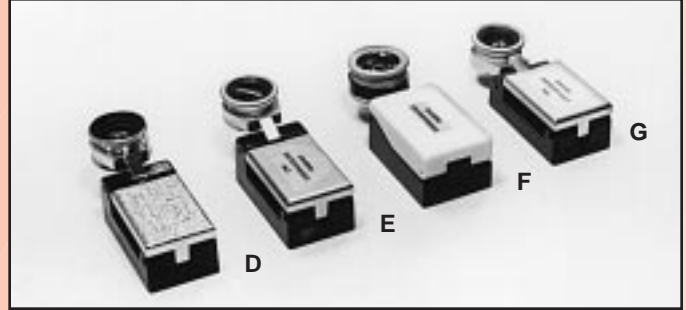
## Clear Base Magnifiers



Magnifiers with clear acrylic bases which are resistant to acids and corrosive chemicals. The clear bases do not block out the light on a light table and the work surface can be viewed through the base of the magnifier. All units feature focusing rings and color corrected achromatic lenses.

- H** 0.375" lens diameter, 20x. Order No.: ONS-0052A
- I** 0.688" lens diameter, 12x. Order No.: ONS-0051A
- J** 0.688" lens diameter, 9x. Order No.: ONS-0050A

## Cassette Magnifiers



Folding cassette magnifiers. All models feature focusing rings and high quality lenses. The lenses fold into the case when not in use for protection and carrying in the pocket.

- D** 0.563" lens diameter, 10x. Order No.: ONS-0040A
- E** 0.563" lens diameter, 12x. Order No.: ONS-0041A
- F** 0.750" lens diameter, 15x. Order No.: ONS-0042A
- G** 0.350" lens diameter, 20x. Order No.: ONS-0043A

## Opaque Base Magnifiers



Magnifiers with opaque bases to shut out incidental light. Ideal for viewing film positives and negatives on the light table. All units feature triple achromatic color corrected lens systems with focusing rings.

- K** 0.625" lens diameter, 9x. Order No.: ONS-0060A
- L** 0.625" lens diameter, 12x. Order No.: ONS-0061A

## High Quality Professional Magnifiers - 5x to 30x Precision magnifiers for all applications.



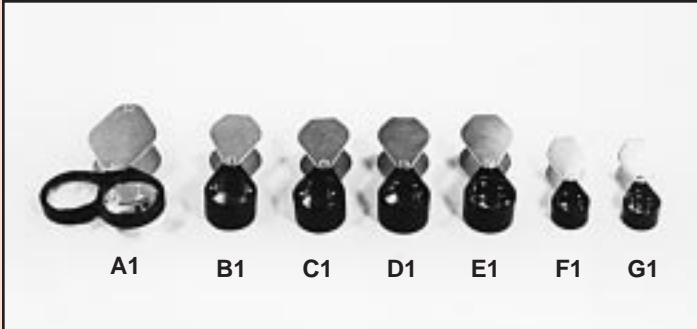
- A.** A 30x flashlight magnifier with a 7.5mm (0.30") diameter lens. Complete with a vinyl case. Two AA batteries required. Order No.: ONS-0375A
- B.** A 15x flashlight magnifier with a 18mm (0.71") diameter double lens system. Two C batteries required. Order No.: ONS-0435A
- C.** A 10x flashlight magnifier with a coated 25mm (0.98") diameter lens and clear base. Two C batteries required. Order No.: ONS-0430A
- D.** A 30x clear base magnifier with a 7.5mm (0.30") lens diameter. Complete with a leatherette case. Order No.: ONS-0370A
- E.** A 22x magnifier with a 20mm (0.79") diameter double lens system and a clear base. Complete with a leatherette case. Order No.: ONS-0083A
- F.** A 15x magnifier with a 18mm (0.71") diameter three lens system and clear base. Order No.: ONS-0085A
- G.** A 10x magnifier with a coated 25mm (0.98") diameter lens and clear base. Order No.: ONS-0081A
- H.** A 5x magnifier with a 25mm (0.98") diameter single lens and a clear base. Order No.: ONS-0087A
- I.** An 8x magnifier for viewing 35mm film and slides with a 28mm (1.10") diameter adjustable focus double lens system. The clear base is graduated in millimeters. Complete with a detachable neck strap. Order No.: ONS-0084A

\*Flashlight magnifiers are supplied without batteries. Replacement bulbs are readily available.

# Magnifiers

Magnifiers 4x to 30x

## Precision Folding Magnifiers



Precision folding magnifiers with a range of magnifying powers for most applications. All units have double plano convex aplanatic lens systems mounted in a black lacquer metal finish housing for distortion free viewing (except A1, ONS-0210A which has a biconvex lens). Housings are made of dull chrome plated brass. Lenses swivel into the housings for protection and portability. A1 ONS-0210A has two lenses which may be used individually or together to give magnifications of 4x, 6x and 10x.

	Lens Diameter	Lens Aperture	Magnifying Power	Order Number	Price
A1	1.181"	1.181"	4x + 6x = 10x	ONS-0210A	
B1	0.906"	0.787"	6x	ONS-0211A	
C1	0.906"	0.787"	8x	ONS-0212A	
D1	0.906"	0.787"	10x	ONS-0213A	
E1	0.906"	0.551"	12x	ONS-0214A	
F1	0.669"	0.394"	15x	ONS-0215A	
G1	0.669"	0.276"	20x	ONS-0216A	

## Economy Folding Magnifiers



Inexpensive folding magnifiers with magnifying powers from 10x to 30x. All units feature double lens systems and metal cases with a satin finish. J1 and K1 feature two separate magnifying powers. Lenses swivel into the housings for protection and portability.

	Lens Type	Magnifying Power	Order Number	Price
H1	Doublet	10x	ONS-0400A	
I1	Doublet	17x	ONS-0401A	
J1	Doublet	10x and 15x	ONS-0402A	
K1	Doublet	20x and 30x	ONS-0403A	

## Gold Finish Magnifiers



The highest quality 10x folding magnifier with a genuine gold plated brass housing and a highly polished finish. The lens system is manufactured from high grade silicate glass with unsurpassed edge to edge sharpness and is achromatic and color-corrected. The lens is 0.669" (17mm) in diameter with an effective aperture of 0.532" (13.5mm). The magnifier is supplied complete with a leather carrying and storage case and is supplied in an attractive jewelry type plastic presentation case.

Order No.: ONS-0230A

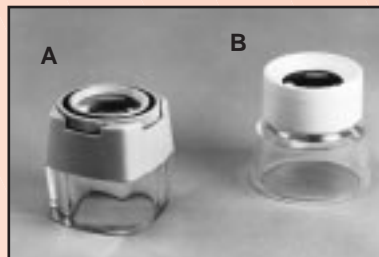
### Wide Field Magnifier - 4x Interchangeable clear & opaque bases.



A 4x magnifier with a wide field of view of 45mm x 45mm (1.77" x 1.77"). The achromatic 27mm (1.06") diameter lens is corrected for chromatic aberration to provide a bright, clear distortion free image. The helicoid screw adjustable lens focusing mechanism is extraordinarily smooth and is the same as used in high quality photographic lenses. Interchangeable clear and opaque bases are provided as standard for regular and light table use. Supplied complete with a detachable neck strap.

Order No.: ONS-0395A

### Standard 8x Magnifiers Clear Base.



Inexpensive high quality clear base magnifiers with acrylic bases to permit light entry and enable the units to be used in ambient lighting conditions.

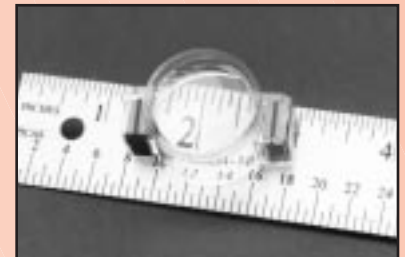
**A.** An 8x magnifier with a 0.900" (23mm) diameter adjustable focus double acrylic lens system. Focusing of the magnifier is accomplished by turning the twist ring at the top of the unit.

Order No.: ONS-0080A

**B.** An 8x magnifier with a 0.984" (25mm) diameter fixed focus double aplanatic lens system.

Order No.: ONS-0082A

### Magnetic Scale Magnifier Easily view fine graduations.



Read fine graduations easily with this 5x magnifier which incorporates magnets that enable the unit to be easily attached to horizontal, vertical and slanted steel surfaces. The magnifier enables the fine graduations on instruments such as rulers, calipers, verniers, protractors, etc., to be easily read with both hands free to manipulate the measuring instrument and the work piece. The small size of 44mm x 20mm x 30mm (1.73" x 0.79" x 1.18") and light weight of 15gm (0.53 oz.) enables the magnifier to be carried in the pocket ready for immediate use. Two magnets are incorporated in the clear plastic housing of the 30mm (1.18") diameter lens.

Order No.: ONS-0385A

# Magnifiers

Precision Measuring 7x & 10x

**Precision Measuring Magnifiers & Comparators - 7x & 10x**  
*Inspect & measure to 0.005".*



Precision 7x and 10x measuring magnifiers and comparators with interchangeable glass measuring reticles for the accurate inspection and measurement of linear dimensions as small as 0.005" or 0.1mm. When an object is viewed through the magnifier, dimensions may be measured quickly and accurately from the scale that is superimposed on the viewed object by the reticle at the base of the magnifier. Many different styles of interchangeable reticles are available for a wide variety of applications including measuring inches, millimeters, angles, hole sizes, etc. Select only the reticles you need or purchase a magnifier complete with a set of five reticles (Styles 1 to 5). See the "Reticle Scales for Magnifiers and Comparators" chart for full details and ordering information. The reticles are very easy and quick to change and all units may be used as regular magnifiers with or without a reticle installed. Each magnifier incorporates an achromatic coated multiple lens system which provides bright, crisp, clear, color corrected and distortion free viewing. Easy and smooth focusing of the magnifier is made possible by a high quality helicoid system similar to that used on photographic lenses. Clear bases admit light from all directions and flashlight units are available for low light areas (require two C cell batteries, not supplied). On flashlight units the magnifier is easily removed from the flashlight housing for use as an independent unit. When the magnifier is removed from the flashlight housing, the magnifier is identical to the separate magnifiers shown in the illustration above. Order what you require from the details below and the reticle information shown later in the "Reticle Scales for Magnifiers and Comparators" chart. All units are supplied complete with a combination storage and carrying case and a protective lens cap.

SPECIFICATIONS AND ORDERING INFORMATION				
	7x Magnification	Price	10x Magnification	Price
<b>Field of View</b>	25mm (0.984")		33mm (1.300")	
<b>Lens Diameter</b>	18mm (0.709")		20mm (0.787")	
<b>*Comparator &amp; Set of 5 Reticles</b>	Order No. ONS-0115A		Order No. ONS-0112A	
<b>Comparator Only (No Reticle)</b>	Order No. ONS-0105A		Order No. ONS-0102A	
<b>Flashlight &amp; Comparator (No Reticle)</b>	Order No. ONS-0305A		Order No. ONS-0302A	

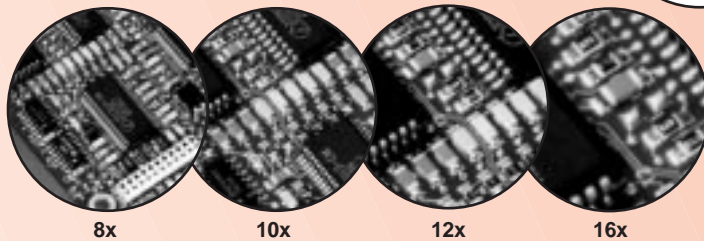
For reticle information see the "Reticle Scales for Magnifiers & Comparators" Chart

\*Comparator set comprises one comparator, 5 black reticles (Styles 1, 2, 3, 4, & 5), a storage/carrying case and a protective lens cap.



### Zoom Measuring Magnifier & Comparator

Adjustable magnifying power, 8x to 16x.



Variable Zoom Magnification from 8x to 16x.

A precision ZOOM measuring magnifier and comparator with infinitely adjustable magnifying powers from 8x to 16x. The smooth precision zoom mechanism operates steplessly by a turn of the focusing ring to provide variable magnification powers from 8x to 16x. A window displays the magnification power and there are convenient click stops at 8x, 10x, 12x, 14x and 16x. The zoom feature operates in a similar fashion to that of a camera. When an object is viewed through the magnifier, dimensions as small as 0.005" or 0.1mm may be measured quickly and accurately from the scale that is superimposed on the viewed object by the reticle at the base of the magnifier. Many different styles of interchangeable reticles are available for a wide variety of applications including measuring inches, millimeters, angles, hole sizes, etc. See the "Reticle Scales for Magnifiers and Comparators" chart later for full details. The reticles are very easy and quick to change and the zoom magnifier may be used as a regular magnifier with or without a reticle installed. The magnifier incorporates an achromatic coated multiple lens system which provides bright, crisp, clear, color corrected and distortion free viewing. The clear base admits light from all directions and a flashlight unit is available for low light areas (requires two C cell batteries, not supplied). The zoom magnifier is easily removed from the flashlight housing for use as an independent unit. When the magnifier is removed from the flashlight housing the magnifier is identical to the separate magnifier shown in the illustration. Order from the details below and the reticle information shown later in the "Reticle Scales for Magnifiers and Comparators" chart. All units are supplied complete with a combination storage and carrying case and a protective lens cap.

SPECIFICATIONS AND ORDERING INFORMATION		
8x to 16x	Zoom Comparator Only	Zoom Flashlight Comparator
Field of View	18mm - 10mm (0.71" to 0.39")	18mm - 10mm (0.71" to 0.39")
Lens Diameter	10mm (0.39")	10mm (0.39")
Order Number	ONS-0390A	ONS-0391A

For reticle information see the "Reticle Scales for Magnifiers & Comparators" Chart.

### Brinell Microscope - 20x

For measuring and hardness testing.

A precision 20x microscope specifically designed to measure the impression of a ball bearing in a surface for Brinell hardness testing. However, the microscope may also be used for general shop use such as inspection and measurement applications. When an object is viewed through the microscope, dimensions may be measured quickly and accurately from the scale that appears projected on the viewed object by the reticle that is enclosed within the microscope. The microscope is of all metal and glass construction and is robust for use in industrial environments. The field of view of the microscope is 7.2mm (0.283") and the vertical movement of the lens barrel is 30mm (1.18"). The microscope is 160mm (6.30") high and 35mm (1.38") in diameter. Weight is 412gm. (15 oz.) and it is ideal for portable use. Each microscope is supplied complete with a metric reticle, calibration disc and vinyl storage case. The metric reticle reads from minus 0.5mm to 0, and from 0 to 5.5mm with scale divisions of 0.05mm.

Order No.: MNS-0300A



### Long Range Magnifier... ...Short Range Magnifier and Telescope, all in one unit.



Magnifier shown to the left.  
Telescope shown above.

A unique adjustable scope incorporating a pocket size 8x20 telescope with a 25x magnifier in a single unit. The main feature of the unit is that when it is used as a telescope objects as close as 300mm (11.8") may be observed and inspected with a magnifying power of 8x. It is possible to inspect objects in inaccessible areas such as holes, the insides of vacuum tubes, etc. cannot be used. The unit may also be used as a conventional telescope to view distant objects. A clear acrylic stand is supplied with each unit which converts the telescope into a powerful 25x magnifier. The stand allows light entry from all angles and has a cutout base for enabling the viewed object to be manipulated or straddled. The image observed is extremely bright and sharp. The field of view when used as a telescope is 113m at 1000m (124 yards at 1094 yards) or 65 degrees. When used as a magnifier the field of view is 10mm (0.39"). The scope is supplied with all items for use as a telescope or magnifier. A leatherette carrying case with straps is supplied as standard.

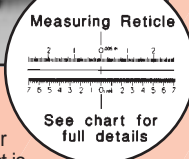
Order No.: ONS-0350A

# Magnifiers

## Specialist Magnifiers 4x to 15x

### Measuring Magnifier & Comparator - 15x

High power for fine detail.



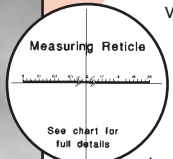
A precision 15x measuring magnifier and comparator with interchangeable glass measuring reticles for the accurate inspection and measurement of linear dimensions as small as 0.005" or 0.1mm. When an object is viewed through the magnifier, dimensions may be measured quickly and accurately from the scale that is superimposed on the viewed object by the reticle at the base of the magnifier. Many different styles of interchangeable reticles are available for a wide variety of applications including measuring inches, millimeters, angles, hole sizes, etc. Select only the reticles you need. See the "Reticle Scales for Magnifiers and Comparators" chart for full details and ordering information. The reticles are very easy and quick to change and all units may be used as regular magnifiers with or without a reticle installed. The magnifier incorporates an achromatic coated multiple lens system which provides bright, crisp, clear, color corrected and distortion free viewing. Easy and smooth focusing of the magnifier is made possible by a high quality helicoid system similar to that used on photographic lenses. The clear base admits light from all directions and a penlight unit is available for low light areas (requires two AA cell batteries, not supplied). On penlight units the magnifier is easily removed from the penlight housing for use as an independent unit. When the magnifier is removed from the penlight housing, the magnifier is identical to the separate magnifier shown in the illustration. Order what you require from the details below and the reticle information shown later in the "Reticle Scales for Magnifiers and Comparators" chart. Both units are supplied complete with a combination storage and carrying case and a protective lens cap.

SPECIFICATIONS AND ORDERING INFORMATION		
8x to 16x	15x Comparator Only	15x Flashlight Comparator
Field of View	14mm (0.551")	14mm (0.551")
Lens Diameter	13mm (0.512")	13mm (0.512")
Order Number	ONS-0106A	ONS-0306A

For reticle information see the "Reticle Scales for Magnifiers & Comparators" Chart.

### Wide Field Measuring Magnifier - 4x

Large bright and sharp image.



The highest quality 4x magnifier with a full 54mm (2.13") diameter field of view. The carefully optically corrected achromatic 4x lens system provides an image that is critically sharp from the center to the edge of the field of view. Ordinary magnifiers are only corrected optically for the central image, this magnifier is corrected for astigmatism and the curvature of field as well as for aberrations of the central image. The construction of this magnifier is similar to that of high quality photographic lenses. When using this magnifier the eye may be placed 25mm (0.984") above the eyepiece enabling the whole field of view to be observed by only moving the eyeball not the head. The clear base of the magnifier provides for light entry from all directions. The lens is of adjustable focus. The magnifier may also be used to measure linear dimensions as small as 0.005" or 0.1mm using the optional measuring reticles which quickly attach to the clear base of the magnifier. The measuring scale of the reticle is superimposed on the viewed object. Different styles of reticles are available. See the "Reticle Scales for Magnifiers and Comparators" chart later for full details and ordering information. The overall size of the magnifier is 70mm (2.75") diameter and 76mm (3.00") high.

Magnifier Only - Order No.: ONS-0365A  
Order reticles as required, please see the "Reticle and Scales for Magnifiers and Comparators" chart for details.

### Collimating Magnifiers - 7x & 10x

Eliminate costly parallax errors.



Collimating magnifiers available in 7x and 10x specifically designed to eliminate parallax errors. The magnifiers feature flat field achromatic lenses of adjustable focus to provide distortion and fatigue free viewing. When a surface is viewed two contrasting sighting rings are observed through the magnifier. When these two rings are concentric to each other it indicates that the eye is exactly at a right angle to the viewed surface. The clear base of the magnifiers allows for the magnifiers to be used under

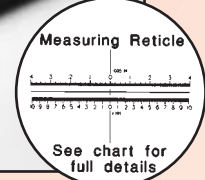
normal lighting conditions. The magnifiers may also be used on a light table or box. These magnifiers are especially useful for film stripping in the graphic arts and printing industries to eliminate costly registration errors. The bottom of the magnifiers is curved to prevent suction when wet stripping film. The field of view of the 7x magnifier is 17mm (0.670") and the field of view of the 10x magnifier is 17mm (0.670").

7x - Order No.: ONS-0180A

10x - Order No.: ONS-0182A

### Collimating Measuring Magnifier - 7x

Measure without parallax errors.



The optical system of this magnifier is telecentric and differs from a conventional magnifier in that a small opening at the focal point of the lens system enables the length and width of not only flat objects but three dimensional ones such as spheres and cylinders to be measured without error due to parallax. This magnifier is in effect a portable version of expensive profile projectors. The 7x lens system is of adjustable focus and three different eyepiece openings may be indexed by the turn of a knurled screw. Openings are 1.0mm (0.040") and 3.0mm (0.118") in diameter and a slot 0.5mm x 3.0mm (0.020" x 0.118"). The field of view is 20mm (0.787"). When an object is viewed through the magnifier, dimensions as small as 0.005" or 0.1mm may be measured quickly and accurately from the scale that is superimposed on the viewed object by the reticle at the base of the magnifier. Interchangeable reticles are available for a wide variety of applications including measuring inches, millimeters, angles, hole sizes, etc. See the "Reticle and Scales for Magnifiers and Comparators" chart for full details and ordering information. The reticles are very easy and quick to change and the magnifier may be used as a regular magnifier with or without a reticle installed. Each magnifier incorporates an achromatic coated multiple lens system which provides bright, crisp, clear, color corrected and distortion free viewing. Easy and smooth focusing of the magnifier is made possible by a high quality helicoid system similar to that used on photographic lenses. The clear base of the magnifier admits light from all directions and a flashlight unit is available for low light areas (require two C cell batteries, not supplied). On the flashlight unit the magnifier is easily removed from the flashlight housing for use as an independent unit. When the magnifier is removed from the flashlight housing, the magnifier is identical to the separate magnifier shown in the illustration. Order what you require from the details below and the reticle information shown later in the "Reticle Scales for Magnifiers and Comparators" chart. The ideal unit to eliminate parallax errors in such applications as film stripping, temperature measurement, meter readings and many more. The magnifier is 35mm (1.378") in diameter and 85mm (3.346") high.

Order No.: Magnifier Only - ONS-0383A

Flashlight Magnifier Only - ONS-0384A

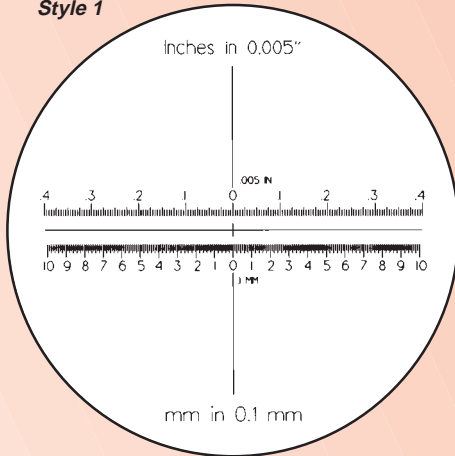
Order reticles as required, please see the "Reticle and Scales for Magnifiers and Comparators" chart for details.

# Measuring Reticles

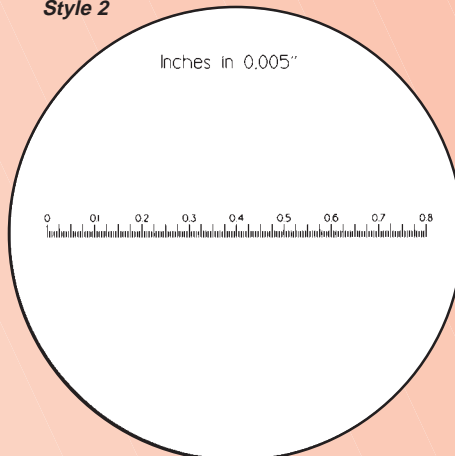
Black, White

## Reticle Scales for Measuring Magnifiers and Comparators

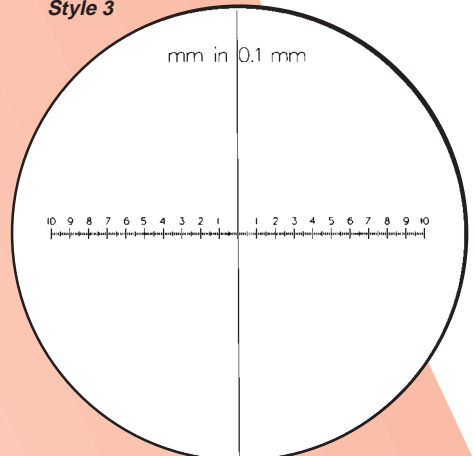
Style 1



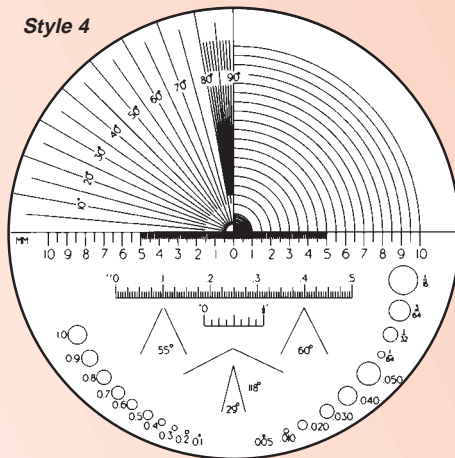
Style 2



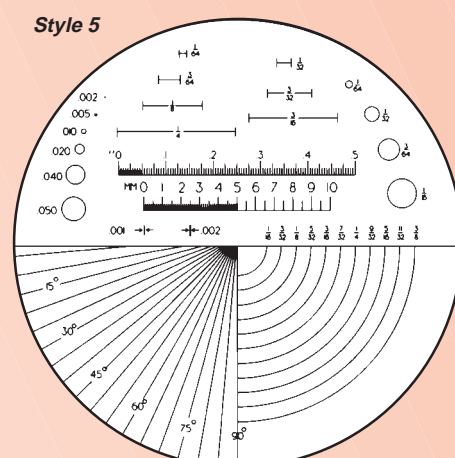
Style 3



Style 4



Style 5










Style 6



All reticles are manufactured from glass with the graduations on the outside surface to be in contact with the item being measured and to eliminate parallax errors. Glass reticles offer a high degree of dimensional stability and the graphics are of high contrast for easy reading. Glass reticles will not bend and are not easily damaged as are film reticles. All reticles have clear crisp black line graduations and graphics with the exception of the OPS-0005A which has white markings. This white graduated reticle is especially useful for use on dark surfaces such as film negatives, etc. where black markings tend to blend with the item being measured. Custom reticles with different graphics and colors to your specifications can be supplied. Contact the factory for details. The pictures of the reticles shown above are for magnifiers with a field of view of 25mm (0.98") or greater. Magnifiers with smaller fields of view will show proportionally less of the reticle.

### Reticle Ordering Information

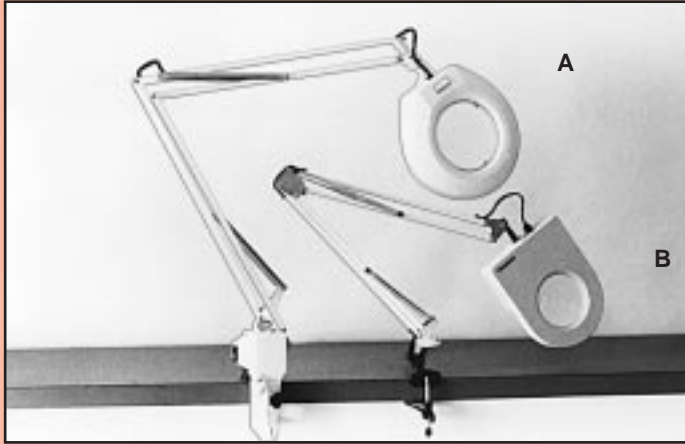
The chart shown below shows which reticles are available for specific magnifiers. Order reticles as required. See catalog pages on magnifiers for full magnifier specifications. Select the styles of reticles you require from the illustrations above, the chart below shows the Order Numbers for the reticles that are available.

	 ONS-0390A ONS-0391A	 ONS-0105A ONS-0305A	 ONS-0102A ONS-0302A	 ONS-0106A ONS-0306A	 ONS-0383A ONS-0384A	 ONS-0365A
	Reticle Order Numbers Below, Magnifier Order Numbers Above					
<b>Style 1 - Black</b>	OPS-0001A	OPS-0020A	OPS-0001A	OPS-0020A	OPS-0020A	—
<b>Style 2 - Black</b>	—	OPS-0024A	OPS-0025A	—	OPS-0024A	—
<b>Style 3 - Black</b>	*OPS-0002A	OPS-0023A	*OPS-0002A	OPS-0023A	OPS-0023A	*OPS-0029A
<b>Style 4 - Black</b>	OPS-0022A	OPS-0021A	OPS-0022A	**OPS-0103A	OPS-0021A	—
<b>Style 5 - Black</b>	—	OPS-0026A	OPS-0027A	—	OPS-0026A	—
<b>Style 6 - Black</b>	—	—	—	—	—	OPS-0028A
<b>Style 1 - White</b>	**OPS-0005A	—	**OPS-0005A	—	—	—
<b>PRICE EACH</b>						

\*\* OPS-0005A    \*\*OPS-0103A

\*Style 3 reticle is as shown for all magnifiers except models ONS-0365A, ONS-0102A, ONS-0302A, ONS-0390A and ONS-0391A. The reticle for the ONS-0365A has the same graduations as shown, however the zero centered scale is longer and reads from 27mm-0-27mm. The reticle for ONS-0102A, ONS-0302A, ONS-0390A and ONS-0391A has a smallest graduation of 0.5mm with the exception that the first millimeter to the right of zero reads in 0.1mm increments and the second millimeter to the right of zero reads in 0.2mm increments.

### Magnifier Lamps



**A** A magnifier lamp to provide balanced fluorescent lighting with a high quality three diopter 4.75" diameter lens for distortion free viewing. A full 42" reach, adjustable in all directions for convenience and an electrical outlet is provided at the base of the unit to supply other devices (electric erasers, etc.). The 110 volt 22 watt fluorescent tube and lens are protected by a tough thermoplastic shade which resists chipping and cracking. The on/off switch is located in the lamp and lens head assembly. Supplied complete with fluorescent tube and adjustable mounting clamp for wall or table mounting. Finished in white, grey, black and chocolate finishes are available to special order. The perfect unit for a drawing or drafting table.

Order No.: ONS-0300A

**B** A magnifier featuring a regular 110 volt 60 watt bulb and a biconvex PXM lens of 4" diameter with 2x magnification providing distortion free viewing where fluorescent lighting is not desired. The unit is adjustable in all directions and the bulb and lens are protected by a durable heat resistant lens mount. The on/off switch is conveniently placed at the base of the unit in the power cord. Finished in white/grey. A standard 110 volt 60 watt bulb is required, not supplied with the unit.

Order No.: ONS-0310A

### Hand Magnifiers

**P1** Good quality magnifiers with optically ground and polished lenses. Lenses are mounted in a metal chrome plated rim with black plastic handles.

Lens Size	Order No.	Price
2" Diameter	ONS-0270A	
3" Diameter	ONS-0271A	
4" Diameter	ONS-0272A	
5" Diameter	ONS-0273A	
4"x 2" Diameter	ONS-0280A	



A reducing glass is also available which reduces the object viewed. 3" diameter lens.

Order No.: ONS-0290A

### Goose Neck Magnifiers



**N1** Aplanatic distortion free 2.36" diameter 4x coated lens. Metal base with 5.90" long neck and chrome plated lens mount.

Order No.: ONS-0260A

A unit with a 3.15" diameter 2.5x lens is available. This unit features an inset 0.787" diameter bifocal 5x lens.

Order No.: ONS-0261A

**O1** Black finish cast iron base with a 4" diameter lens mounted in a metal chrome plated rim.

Order No.: ONS-0265A

### Professional Inspection Lens

*Hand held.*



A 3x magnifier specifically designed and engineered for the repetitive observation and inspection of production parts. The low magnification and the high quality optics produce a clear, crisp, bright image and the magnifier is practical to use without eye strain. The light weight of 56gm (1.97 oz) with a convenient lens diameter of 50mm (1.97") permits tire free repetitive use. The highest quality thin optical lens is mounted in a light weight knurled aluminum barrel. A neck strap is provided.

Order No.: ONS-0295A



### 3D Sighter Binocular Magnifier

*Adjustable from 2.2x to 5.2x.*

A high quality professional precision binocular magnifier featuring magnifying powers of 2.2x, 3.3x, 4.1x and 5.2x which easily adjusts to any head size.

The finest lenses provide clear enlarged vision in three dimensions.

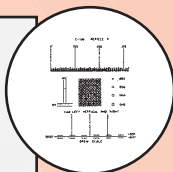
Eye glasses and bifocals may be worn with this magnifier. The magnifier flips up on the head band when not required. The adjustable padded head band features convenient magic "Hook & Loop" fastening. The ideal magnifier for hands free use in critical operations such as engineering, photography, inspection, electronics, modeling, and many more.

Order No.: ONS-0175A



*Two movable and one fixed lens to provide four different magnification powers from 2.2x to 5.2x*

### Magnetic Ink Printing Comparator

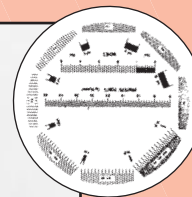


Order No.: OPS-0010A  
Magnetic ink reticle for use with ONS-0110A. Check character skew, width, coverage and voids against American Banking Association tolerances.

A 12x clear base comparator available with an optional 12x reticle as shown for checking the specifications of magnetic ink printing. The lens system is of the Kellner type and is 0.545" in diameter. A focusing and locking ring is incorporated. The field of view is 0.5". The glass reticle is etched on the underside to eliminate parallax errors. The comparator may be used as a regular magnifier if the reticle is not installed.

Order No.: ONS-0110A (Comparator only)  
OPS-0010A (Magnetic Printing Ink reticle only)

### Graphic Arts Comparator

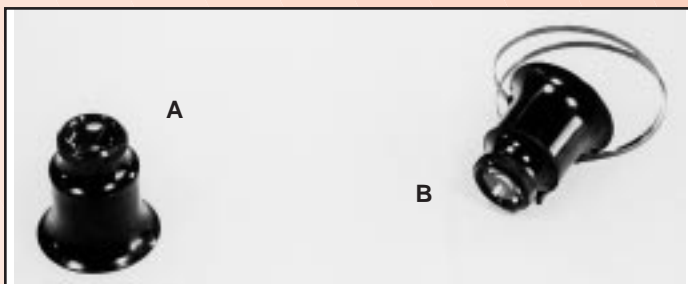


Order No.: OPS-0011A  
Graphic arts reticle for use with ONS-0111.  
Linear scales: 48 points long measures in 1/2 points and 1/2" long in 1/100" and 1/200". 12 halftone scales from 50 to 1/100 lpi. Point blanks from 1/4 to 6 point.

A 6x clear base comparator available with an optional reticle as shown for measuring many different parameters in the Graphics Arts and Printing areas. The 0.875" diameter glass lens incorporates a focus and locking ring. The field of view is 1". The glass reticle is etched on the underside to eliminate parallax errors. The comparator may be used as a regular 6x magnifier if the reticle is not installed.

Order No.: ONS-0111A (Comparator only)  
OPS-0011A (Graphics Arts reticle only)

### Watchmakers Loupes



Watchmaker's and Jeweler's Loupes which are designed to be screwed into the eye or held by a metal band around the head. Each unit incorporates a two lens system with a magnifying power of 10x. One lens may be easily unscrewed and the units used with a magnifying power of 4x.

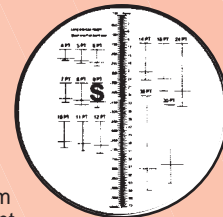
- A Regular Watchmaker's Loupe. Order No.: ONS-0160A
- B Watchmakers Loupe with metal head band. Order No.: ONS-0161A

### Type Size Finders



#### Scales Available

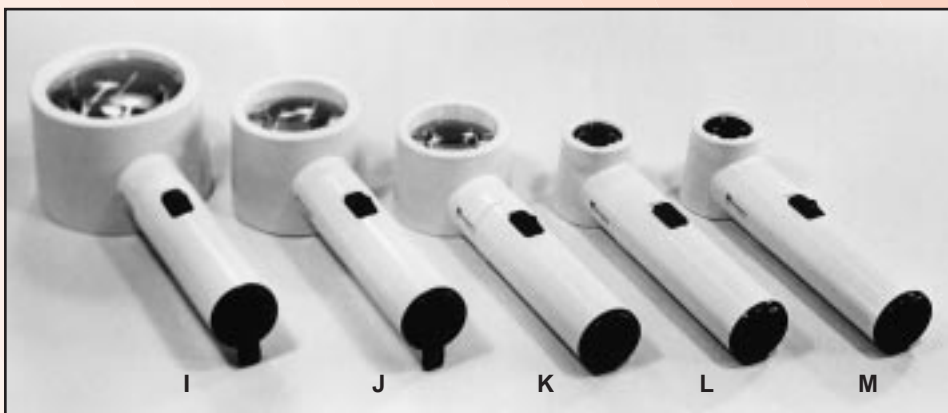
Center Scale: 1" long in 1/2 points and 0.005". Type sizes shown from 4 point to 36 point.



Clear base magnifying type size finders and measuring instruments. The 8x color corrected achromatic lens system provides distortion free viewing and accurate measurements. Each magnifier incorporates a precision measuring scale. Custom and imprinted reticles and scales are available in high and low quantities on request.

Order No.: ONS-0120A

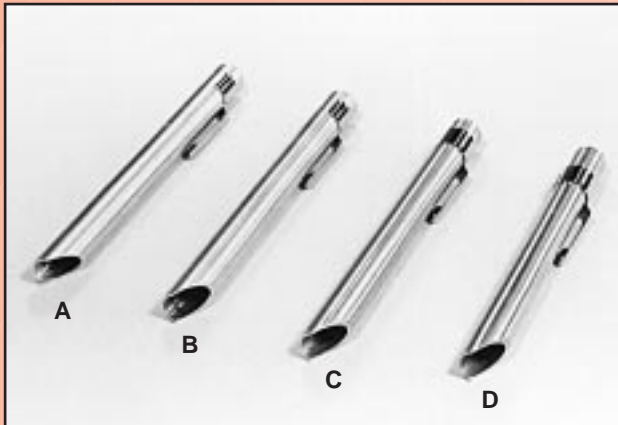
### Flashlight Magnifiers



Professional hand held flashlight illuminated magnifiers with rugged white plastic housings. Light weight PXM lens systems with a duplex coating are featured in all units. Two C size batteries required (not supplied). Models L ONS-0203A and M ONS-0204A feature removable measuring scales graduated in 1/64" and 1/2mm.

	Magnifying Power	Lens Diameter	Lens Type	Order Number	Price
I	3x	3.15"	Biconvex	ONS-0200A	
J	4x	2.36"	Aspheric	ONS-0201A	
K	6x	1.97"	Aspheric	ONS-0202A	
L	7x	1.18"	Aplantic	ONS-0203A	
M	10x	1.18"	Aplantic	ONS-0204A	

### Pocket Microscopes With Measuring Scales



Pocket microscopes of aluminum construction. A bevelled opening gathers and focuses the light on the work surface. Lenses are of fixed focus and provide undistorted viewing. All units feature a built in measuring reticle with graduations as shown below. The microscopes are  $\frac{7}{16}$ " in diameter,  $\frac{4}{8}$ " long and supplied with a pocket clip.

	Magnifying Power	Reticle Graduations	Field of View	Order Number	Price
A	10x	0.005"	0.265"	MNS-0200A	
B	20x	0.002"	0.190"	MNS-0210A	
C	40x	0.001"	0.082"	MNS-0220A	
D	50x	0.001" and 0.1mm	0.065"	MNS-0230A	

A penlight attachment which clips onto the above units is available. (One AA battery required.) Order No.: MPS-0001A

### Pocket Microscopes



**I** A hand-held field pocket microscope of metal construction. The unit features an adjustable focus achromatic lens system with a flat field of view. The variable focusing permits magnification factors from 20x to 60x. The chrome plated base of the unit gathers and reflects light for easy viewing of an object.

Order No.: MNS-0010A

**J** A 25x high quality pocket microscope with a clear acrylic base for light entry. The lens system is of a fixed focus type for ease of use. The microscope is light in weight and convenient to use. Supplied complete with leatherette storage and carrying case.

Order No.: MNS-0020A

### Illuminated Lightscopes

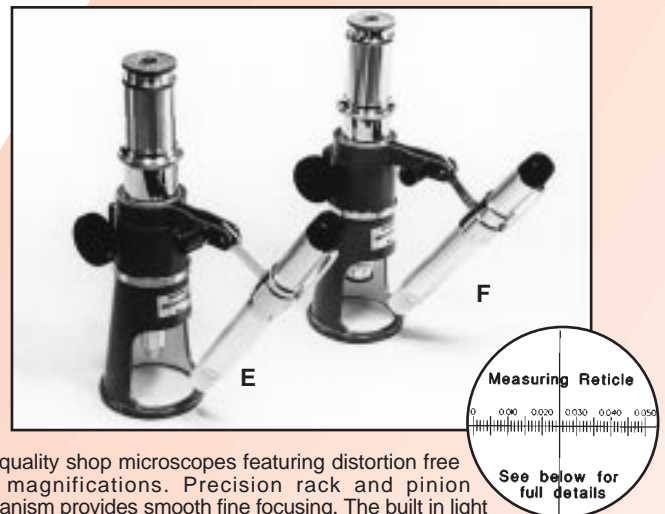


Inexpensive telescope magnifiers with a built in battery operated light source. Fine focusing is possible and the units are free standing for hands free use. Achromatic lenses are used for distortion free viewing. Two size AA batteries are required (not supplied).

**G** 30x Illuminated Lightscope. Order No.: MNS-0001A

**H** 100x Illuminated Lightscope with removable 35mm film viewing stand. Order No.: MNS-0005A

### Shop Microscopes



High quality shop microscopes featuring distortion free high magnifications. Precision rack and pinion mechanism provides smooth fine focusing. The built in light source provides for easy viewing. These microscopes offer a wide field of view. The cutout base enables the viewed object to be manipulated. The overall height of the microscopes is 160mm (6.30"). Reticles are interchangeable between microscopes of the same magnifying power only. Two size AA batteries are required (not supplied). Measuring reticles are available as shown below. A 60x and 100x model is available, select measuring reticles as required.

**E** 60x Shop Microscope, Order No.: MNS-0100A (No reticle)

**F** 100x Shop Microscope, Order No.: MNS-0120A (No reticle)

Available Measuring Reticles:

For MNS-0100A: 0.001" graduations, 0.090" field.  
Order No.: MPS-0050A  
0.02mm graduations, 2.20mm field.  
Order No.: MPS-0060A

For MNS-0120A: 0.0005" graduations, 0.070" field.  
Order No.: MPS-0070A  
0.01mm graduations, 1.80mm field.  
Order No.: MPS-0080A

Note: Reticles used in 60x and 100x units are not interchangeable.

# Microscopes

Stand and Wide Field, 20x to 200x

**Portable, Illuminated, Wide Field Measuring Microscopes**  
20x to 200x for precision inspection and measurement.



Measuring stand microscopes with wide fields of view incorporating clear acrylic bases, high quality optics and self contained battery operated penlight illumination. Dimensions may be measured quickly and accurately from the scale that appears projected on the viewed object by the reticle that is enclosed in the microscopes. Optional interchangeable reticles are available in metric and inch graduations. The smallest graduation and the length of the scale depends upon the magnification power of the microscope. The microscopes may be used without measuring reticles to provide regular wide field of view microscopes with high power magnification and clear, crisp and undistorted images. The measuring reticles are enclosed in the microscopes and will not get dirty. The reticles are easily installed and removed. The microscopes will also measure the depth of an object in 0.1mm increments. To measure depth, focus on the top of the object and read the scale on the focusing ring. Focus on the bottom of the object and read the scale again. Subtract the two readings to provide the depth in millimeters. Focusing the microscopes is easy and smooth. The focusing mechanism utilizes a helicoid system as used in high quality photographic lenses. A rubber eyepiece is standard and is easily folded down by eyeglass users. The clear acrylic base of the microscopes allows light to illuminate the object being viewed from all directions and the adjustable penlight may be used in low light areas. The clear acrylic base has a cut out to enable viewed objects to be manipulated. The overall size of the microscopes is 63mm x 172mm (2.48" x 6.77") and the weight is 316gm. (11.1 oz). All microscopes are supplied with a rigid vinyl carrying and storage case. Two AA batteries are required for penlight illumination.

Magnification Power		20x	40x	60x	100x	150x	200x
Field of View	Millimeter (Inch)	7.20mm (0.283")	3.60mm (0.142")	2.40mm (0.095")	1.45mm (0.057")	0.96mm (0.038")	0.72mm (0.029")
Working Distance	Millimeter (Inch)	36.0mm (1.42")	18.7mm (0.74")	10.8mm (0.43")	5.7mm (0.22")	9.2mm (0.36")	6.7mm (0.26")
Metric Reticle	Min. Graduation Scale Length	0.10mm 6.0mm	0.05mm 3.0mm	0.02mm 2.0mm	0.01mm 1.2mm	0.005mm 0.9mm	0.002mm 0.6mm
Inch Reticle	Min. Graduation Scale Length	0.005" 0.250"	0.002" 0.120"	0.001" 0.080"	0.0005" 0.050"	0.0002" 0.036"	0.0001" 0.024"
Order Numbers and Prices	Microscope Only	MNS-0420A	MNS-0440A	MNS-0460A	MNS-0470A	MNS-0480A	MNS-0490A
	Reticle Millimeter	MPS-0421A	MPS-0441A	MPS-0461A	MPS-0471A	MPS-0481A	MPS-0491A
	Reticle Inch	MPS-0420A	MPS-0440A	MPS-0460A	MPS-0470A	MPS-0480A	MPS-0490A
<b>Replacement Parts</b>							
Rubber Eye Piece: MPS-0006A		Penlight: MPS-0007A		Clear Plastic Base: MPS-0008A		Penlight Bracket: MPS-0009A	

## Stand Microscopes



Stand microscopes with clear bases and high quality optics with a fine focusing mechanism. Units are able to measure both width and depth. Depth is measured in 0.1mm increments on the graduated focusing ring. Width is measured with the interchangeable inch or mm reticles within the microscope. A rubber eyepiece is supplied as standard. The clear acrylic base of the microscopes admits light from all directions and the cutout enables a viewed object to be manipulated. The overall size of the microscopes is 41.5mm (1.63") in diameter and 122mm (4.80") high. All microscopes are supplied in a plastic carrying and storage case. All units are supplied without a reticle, order reticles as required. Reticles are interchangeable between microscopes of the same magnifying power only.

- A 25x Stand Microscope, Order No.: MNS-0050A (No reticle)
- B 50x Stand Microscope, Order No.: MNS-0070A (No reticle)
- C 75x Stand Microscope, Order No.: MNS-0080A (No reticle)
- D 100x Stand Microscope, Order No.: MNS-0090A (No reticle)

Available Measuring Reticles:

- For MNS-0050A: 0.002" graduations, 0.125" field. Order No.: MPS-0010A  
0.05mm graduations, 3.30mm field. Order No.: MPS-0020A
- For MNS-0070A: 0.001" graduations, 0.080" field. Order No.: MPS-0030A  
0.02mm graduations, 2.00mm field. Order No.: MPS-0040A
- For MNS-0080A: 0.0005" graduations, 0.043" field. Order No.: MPS-0100A  
0.01mm graduations, 1.09mm field. Order No.: MPS-0110A
- For MNS-0090A: 0.0005" graduations, 0.033" field. Order No.: MPS-0120A  
0.005mm graduations, 0.84mm field. Order No.: MPS-0130A

Note: Reticles used in 25x, 50x, 75x and 100x units are not interchangeable.

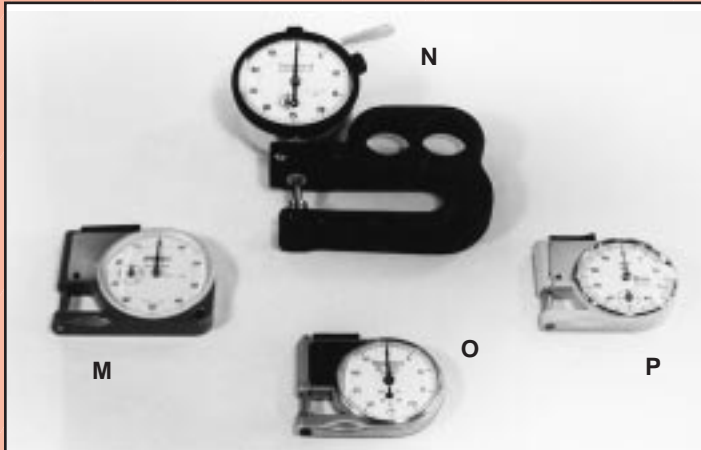
Replacement Parts:

- MPS-0180A: Rubber eyepiece
- MPS-0190A: Clear plastic skirt base

# Measuring Instruments

Dial Gauges, Micrometers and Calipers

## Dial Thickness Gauges



Convenient easy to read dial thickness gauges for accurately measuring the thickness of paper, card, plastic and other sheet materials. Spring loaded anvils are easily opened and measurements are read directly from the dial. All models include a small count hand to record the revolutions of the large dial hand.

**M** Pocket dial thickness gauge with 0.39" throat and a measuring range up to 0.375". Dial reads from 0 to 100 in 0.001". Convenient zero setting by turning the dial face. Supplied complete with a vinyl case.  
Order No.: BNS-0020A

**N** Portable dial hand thickness gauges with 2.50" throat and a measuring range up to 0.5" for the inch model and 10mm for the metric model. Anvils are 0.375" in diameter. Convenient zero setting by turning the dial. Inch model, dial reads from 0 to 50 in 0.0005".

Order No.: BNS-0030A

Metric model, dial reads from 0 to 100 in 0.01mm.

Order No.: BNS-0031A

**O** The finest quality pocket thickness dial gauges made in the U.S.A. Three models available with 0.31" throat and a measuring range of 0.375" for the inch model and 9mm for the metric model. Zero setting by a set screw at the base of the 0.25" diameter anvils. Supplied complete with a vinyl case.

Inch model, dial reads from 0 to 100 in 0.001".

Order No.: BNS-0001A

Inch model, dial reads from 0 to 50 in 0.0005".

Order No. BNS-0002A

Metric model, dial reads from 0 to 100 in 0.01mm.

Order No. BNS-0003A

**P** Pocket dial thickness gauge with 0.39" throat and a measuring range up to 0.375". Dial reads from 0 to 100 in 0.001". Zero setting by a set screw at the base of the 0.236" diameter anvils. Supplied complete with a vinyl case.

Order No.: BNS-0010A

Optional Leatherette case for M, O, and P. Order No.: LNS-0100A

## Deep Throat Dial Thickness Gauge



An easy to use and read dial thickness gauge for accurately measuring the thickness of paper, card, plastic and other sheet materials. Spring loaded anvils are opened by a lever at the top of the gauge. Measurements are read directly from the dial in 0.001" increments. A small count hand records each revolution of the large hand. Each revolution is 0.100" (100 thousandths of an inch). Convenient zero setting by turning the dial bezel. Maximum thickness capacity is 1.00" and the extra deep throat extends 4.75" from the center of the anvils.

Order No.: BNS-0110A

## Ring Dial Thickness Gauge



This gauge measures sheet materials including paper, plastic, metal, card, fabric, etc. A convenient easy to operate gauge, with one finger through the ring press down on the pad to raise the anvil. Insert the material to be measured, release the thumb from the pad and spring pressure holds the material between the anvils. Thickness is registered in 0.001" increments on the dial of the gauge. Convenient zero setting by turning the knurled bezel of the dial. The maximum thickness capacity is 0.150" and the dial reads from 0 to 100 in 0.001" increments. Throat depth is 1.125".

Order No.: BNS-0140A

## Paper Gauge Micrometer Caliper



A precision made American micrometer specifically designed for measuring paper, card, cardboard, etc., however most other sheet materials can also be measured. The extra large 7/16" diameter anvils are lapped and prevent the compressing of the material being measured. The floating anvil disk automatically adjusts itself to any surface condition. The micrometer will measure thicknesses up to 11/32" in 0.001" increments. A ratchet stop, lock nut and ring are included. The small size, only 3.5" long and the finger holding ring make the micrometer easy and convenient to use.

Order No.: BNS-0150A



# Measuring Instruments

Dial Gauges, Micrometers and Calipers

## Dial Gauge and Stand



Inch Model Indicator, Order No.: BNS-0130A  
Metric Model Indicator, Order No.: BNS-0131A  
Stand for either models, Order No.: BNS-0120A

A dial indicator gauge and stand for the accurate measurement of most materials including the thickness of sheet materials such as paper, card, fabric, etc. The spring loaded anvil of the dial indicator is easily opened and is made from hardened stainless steel for long life. The gauges measure in either 0.001" or 0.01mm increments depending upon model. The dial faces are calibrated either to read 0 to 100 per revolution or 0-50-0 per revolution. A small hand revolution counter is standard on all models. The measuring range for the inch model is 0 to 0.250" and 0 to 10mm for the metric model. The indicators are 2.25" in diameter and feature convenient zero setting by turning the dial bezel. Two tolerance limit indicators make repetitive inspection procedures less complicated. The sturdy dial indicator stand is constructed of cast iron with a ground base plate and a ground steel post for rigidity and long life. The dial indicators easily attach to the post adaptor with a 1/4" bolt and the dial indicator is held 2.25" from the center line of the post. The post adaptor allows for rapid preliminary positioning and a 3/8" of travel for fine adjustment of the indicator on the post. The indicator may be positioned 6.5" from the base. The post is 5/8" from the back edge of the table which measures 5.5" x 4.25". The post diameter is 1". Both inch and metric indicators are easily interchanged on the stand. Order indicators and stand as required.

## Screw Micrometers



Swiss style precision micrometers with thimble ratchets for consistent measurements. Measuring faces are 0.256" in diameter and carbide tipped for long life. A positive spindle locking device is incorporated and micro fine graduations are easy to read. All models are supplied with a zero setting wrench.

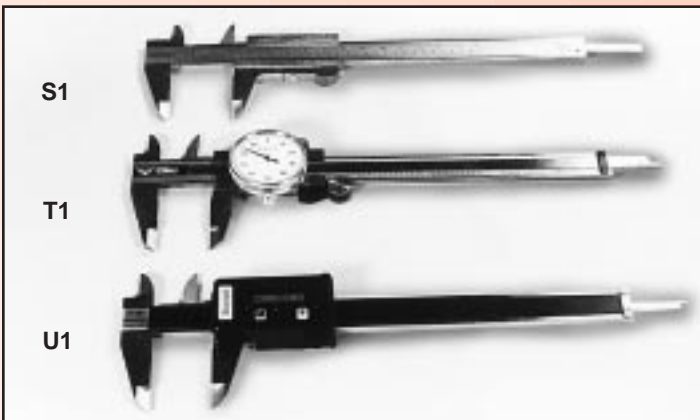
**Q1** An inexpensive high quality micrometer with a 0 to 1" measuring range in 0.001". Order No.: BNS-0050A

**R1** Digital micrometers for easy reading with an additional vernier on the sleeve enabling measurements as small as 0.0001" to be made.

Inch model, 0 to 1" measuring in 0.001" on the face and 0.0001" on the vernier. Order No.: BNS-0060A

Metric model, 0 to 25mm measuring in 0.01mm on the face and 0.001 mm on the vernier. Order No.: BNS-0061A

## Precision Calipers



**T1** Dial calipers made of hardened stainless steel with precision ground and lapped measuring faces. Three way jaws for outside, inside and depth measurements. Beam is graduated in 0.100" and a knurled thumb button permits rapid traverse. Two models available.

0 to 4" capacity, dial reads in 0.002", 0.100" per revolution.  
Order No.: BNS-0080A

0 to 6" capacity, dial reads in 0.001", 0.100" per revolution.  
Order No.: BNS-0081A

**U1** An American made electronic digital caliper with a hardened stainless steel body. Inside, outside and depth measurements may be made. LCD digital readouts displays in 0.001" or 0.01mm and a bar display enables measurements as small as 0.0001" and 0.001mm to be made. The electronic design allows the following features by quick push button pressing. Changing from inches to mm, zero at any position, hold measurement, peak low and high readings, out of tolerance display alert and output capabilities in all modes for computers and computer printers. Two 1.5 volt batteries are supplied with the unit. The ultimate in measuring instruments.

Order No.: BNS-0090A

**S1** Precision vernier calipers made of hardened stainless steel with micro fine graduations. Extra long vernier ensures accuracy. Three way jaws for outside, inside and depth measurements. 0 to 6" and 0 to 150mm capacity reading in 0.001" and 0.02mm on the same unit. Measuring faces are ground and lapped. Order No.: BNS-0070A

## Dial Depth Gauges



**V1** A dial depth gauge with a needle point to measure depths. The knife edge base allows for precise positioning of the needle point. A light touch on the button on the top of the gauge advances the needle point until it contacts the work surface. Base length is 2.5 inches. The measuring capacity is 0.125" and the dial reads in 0.0005". The dial face is calibrated to read plus and minus from 0 to +0.025" and from 0 to -0.025".  
Order No.: BNS-0100A

# T-Squares/Straight Edges

12" to 72" Blade Length

## Professional Stainless Steel T-Squares



T-Squares with a bevel on the top edge of the blade and magnetic heads are available on all sizes to special order. Please contact us for catalog numbers and pricing information.

Models are available on special order with graduated blades, different lengths, bevels and ink bevels.

To special order any length of T-Square, please contact us for ordering details and pricing information. T-Squares are available from 18" to 60".

The finest quality T-Squares with tempered stainless steel blades to reduce nicking and damage to the blade. All edges of the blade are precision ground and the aluminum head features radiused finger holes for easy movement of the T-Square on the drawing board or light table. Regular models have square edges on the blade. A bevel on the top front edge of the blade is available. Magnetic models feature magnets in the head enabling the units to be used on sloping surfaces with steel edges. Order whatever combination of features you required from the details below.  
For models up to 30" long, blade size is 1.5" x 0.075" and head length is 10". For models over 30" long, blade size is 2.0" x 0.075" and head length is 12".

Length Regular	18"	24"	30"	36"	42"	48"	54"	60"
Order No.	TNS-1800A	TNS-2400A	TNS-3000A	TNS-3600A	TNS-4200A	TNS-4800A	TNS-5400A	TNS-6000A
Price								

## Economy Stainless Steel T-Squares



Inexpensive T-Squares of good quality with tempered stainless steel blades and aluminum heads. All models have blades measuring 1.50" x 0.060" and both edges of the underside of the blade are slightly bevelled to enable inked lines to be drawn without smudging. The head length on all models is 11.375".

Length	18"	24"	30"	36"	42"	48"
Order No.	TNS-8180A	TNS-8240A	TNS-8300A	TNS-8360A	TNS-8420A	TNS-8480A
Price						

To special order any length of T-Square, please contact us for ordering details and pricing information. T-Squares are available from 18" to 60".

## Professional Stainless Steel Straight Edges



Stainless steel straight edges of good quality with a bevel on the top edge. All models are 2" wide and 0.090" thick. All stainless steel straight edges are available on special order with lifting knobs. For prices and ordering information, please contact us with details of the length of straight edge that you require and the number and placement of lifting knobs desired.

Note: Straight edges on special order are also available in any length from 12" to 72". Please contact us for catalog numbers and pricing information.

Length	12"	18"	24"	30"	36"	42"	48"	54"	60"	72"
Order No.	ENS-9012A	ENS-9018A	ENS-9024A	ENS-9030A	ENS-9036A	ENS-9042A	ENS-9048A	ENS-9054A	ENS-9060A	ENS-9072A
Price										

## Safety Straight Edges



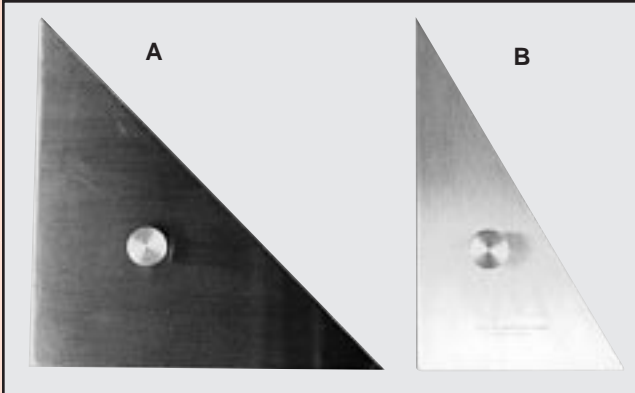
Straight edges specifically for the safe cutting of materials. The unique "T" construction protects an operator should a knife or razor blade slip or skip while material is being cut. The straight edges are manufactured from aircraft grade aluminum and feature an extra wide 3.5" wide base with an anti slip rubber covering. Used correctly these straight edges protect both the operator and artwork. A hanging hook is provided. Five sizes from 12" to 42" long are available.

Size	12"	18"	24"	36"	42"
Order No.	ENS-7012A	ENS-7018A	ENS-7024A	ENS-7036A	ENS-7042A
Price					

# Triangles

Stainless Steel and Plastic

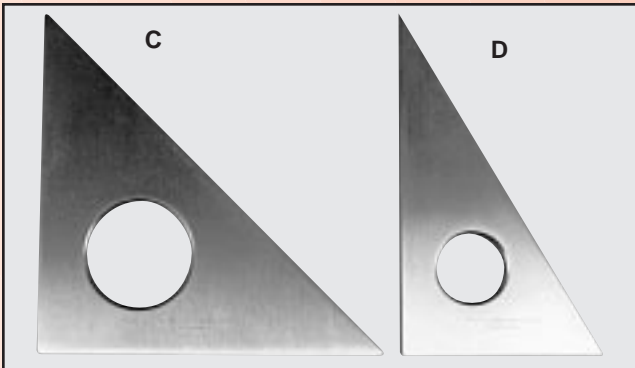
## Stainless Steel With Lifting Knobs



The finest triangles manufactured from hard stainless steel for durability and long life. All edges are precision ground to guarantee trueness. These triangles feature a lifting knob which is easily reversible on the triangle for right or left hand use. Models are available with 30°, 60° and 90° angles or 45°, 45° and 90° angles. To special order all models are available with the vertical edge bevelled for right or left hand use. Sizes shown below are the length of the vertical edge.

		6"	9"	12"	15"	18"
A	45°/45°/90°	ANS-3406A	ANS-3409A	ANS-3412A	ANS-3415A	ANS-3418A
A	Price					
B	30°/60°/90°	NA	ANS-3209A	ANS-3212A	ANS-3215A	ANS-3218A
B	Price					

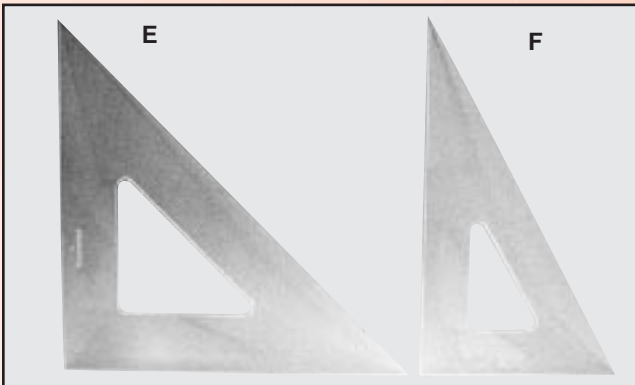
## Stainless Steel - Open Center



The finest triangles manufactured from hard stainless steel for durability and long life. All edges are precision ground to guarantee trueness. These triangles feature a cut out center for easy lifting from the work surface. Models are available with 30°, 60° and 90° angles or 45°, 45° and 90° angles. Sizes shown below are the length of the vertical edge.

		6"	9"	12"	15"
C	45°/45°/90°	ANS-3106A	ANS-3109A	ANS-3112A	ANS-3115A
C	Price				
D	30°/60°/90°	NA	ANS-3009A	ANS-3012A	ANS-3015A
D	Price				

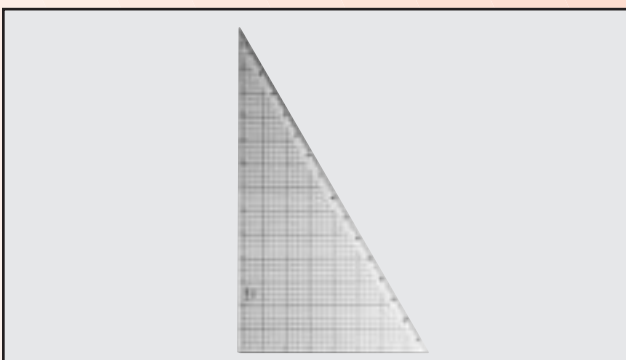
## Plastic - Open Center



Precision clear acrylic triangles which will not warp, discolor or become brittle with age. These triangles feature precision ground edges and should not be confused with regular molded triangles. Guaranteed true for professional use. Each triangle has a cut out for easy lifting from the work surface. Models are available with 30°, 60° and 90° angles or 45°, 45° and 90° angles. Sizes shown below are the length of the vertical edge.

		4"	6"	8"	10"	12"	14"	16"	18"	24"
E	45°/45°/90°	ANS-1104A	ANS-1106A	ANS-1108A	ANS-1110A	ANS-1112A	ANS-1114A	ANS-1116A	ANS-1118A	ANS-1124A
E	Price									
F	30°/60°/90°	ANS-1004A	ANS-1006A	ANS-1008A	ANS-1010A	ANS-1012A	ANS-1014A	ANS-1016A	ANS-1018A	ANS-1024A
F	Price									

## Plastic With Cutting Edge



Clear acrylic triangles with two bevelled edges and a stainless steel edge on the vertical edge for cutting and inking. Clearly marked grids and calibrations in inches to 1/16" which are visible on both dark and light surfaces are featured on all models. Models are available with 30°, 60° and 90° angles or 45°, 45° and 90° angles. Sizes shown below are the length of the vertical edge which has the stainless steel insert.

		8"	10"	12"	14"
	45°/45°/90°	ANS-1308A	ANS-1310A	ANS-1312A	NA
	Price				
	30°/60°/90°	NA	ANS-1410A	ANS-1412A	ANS-1414A
	Price				



## Opaqueing Pens



Super density Pake Pens work with a push and flow mechanism. One application opaques completely with an even coating. The perfect pens for opaueing negatives. Remover is available.

Point Size		Color		Price
		Black	Red	
A	Medium	PNS-0001A	PNS-0021A	
B	Fine	PNS-0002A	PNS-0022A	
C	Ultra Fine	PNS-0003A	PNS-0023A	
D	Remover	PNS-0030A	PNS-0030A	

## Pounce Wheels and Film Cutters



**E F G** and **H** Pounce wheels for marking and tracing patterns. The pounce wheels are designed so that they may be swiveled around circles, curves and arcs or they may be locked for straight use.

**E** 0.25" diameter wheel with 21 teeth per inch. Order No.: KNS-0009A

**F** 0.25" diameter wheel with 15 teeth per inch. Order No.: KNS-0010A

**G** 0.25" diameter wheel with 15 teeth per inch, one side of the wheel is bevelled to follow a straight edge. Order No.: KNS-0011A

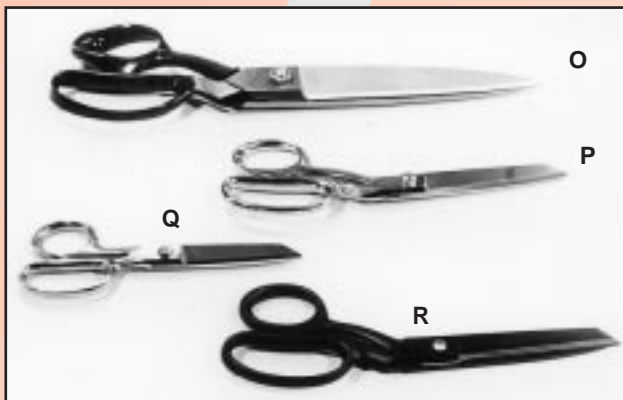
**H** 0.44" diameter wheel with 15 teeth per inch. Order No.: KNS-0012A

**I** Film rule cutters for neatly and accurately cutting or ruling film. The spoon type cutting edge enables a sharp clean line to be produced without damaging or scratching the film. A set of three cutters for fine, medium and heavy lines. Order No. KNS-0018A

Not shown: Industrial grade single edge razor blades. Box of 100.

Order No.: KPS-9100A

## Scissors



The finest German made scissors for a lifetime of use.

**O** 10" cutting edge, polished steel with black japanned handles. Ideal for heavy duty applications.

Right hand, Order No.: KNS-0004A

Left hand, Order No.: KNS-0005A

**P** 8" cutting edge. chrome plated and supplied in protective molded sheath.

Right hand, Order No.: KNS-0002A

Left hand, Order No.: KNS-0003A

**Q** 6" cutting edge, chrome plated.

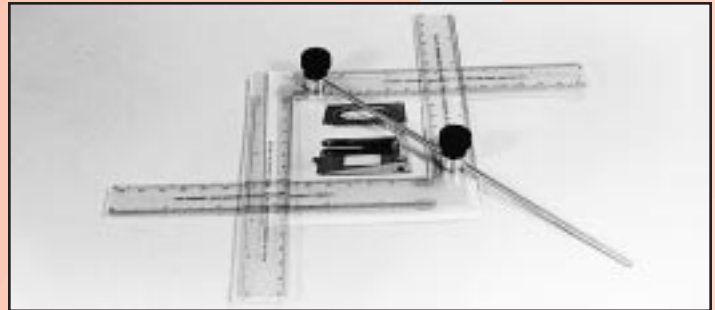
Right hand, Order No.: KNS-0001A

**R** 8" cutting edge, featherweight scissors with a black nylon frame and stainless steel cutting blades. Will not damage light tables or other fragile surfaces. Ideal for cutting film. Right hand, Order No.: KNS-0006A

Not shown: Sharpening stone.

Order No.: KPS-0001A

## Scaleograph



Crop and scale with ease photographs, transparencies, art, etc. Once set to the correct proportion the scaleograph enlarges or reduces automatically with no possibility of error. The scaleograph is to squares and rectangles what the compass is to circles. Units may be used on the ground glass of a camera to insure correct proportions. Two models are available.

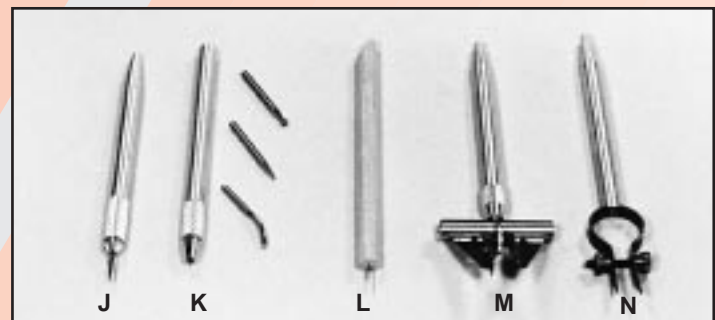
Regular, calibrated in inches and picas, size 12" x 12".

Order No.: WNS-0090A

Metric, calibrated in cm, mm and inches size 6" x 6".

Order No.: WNS-0095A

## Burnishers and Dual Cutters



**J** All aluminum pin vise will hold drills up to 0.063" diameter. Pin retracts into handle when not in use.

Order No.: KNS-0044A

Pins for use in **J** KNS-0044A (Pack of 12) Order No.: KPS-0044A

**K** A burnisher supplied with three interchangeable tips. A spoon burnisher which is ideal for transfer lettering and 0.125" and 0.063" diameter ball tips. Four jaw chuck securely holds the tips. Order No.: KNS-0041

**L** Inexpensive stylus burnishers. A hardwood handle with a rounded end for burnishing and a needle in the other end for cutting acetate, piercing etc. Supplied in packages of five, needles are protected by a cork cap.

Order No.: KNS-0045A

**M** A duaflex cutter featuring two blades with an adjustable spring platform and swivel head which locks for straight cutting. Easily cut circles, curves and parallel lines. Cut width is adjustable from very fine to 0.625".

Order No.: KNS-0161A

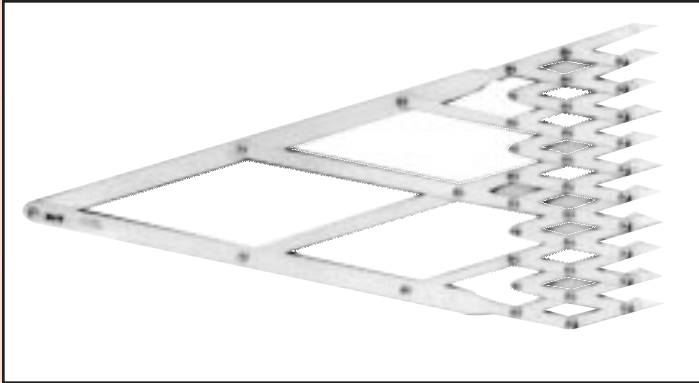
Replacement blades for **M** KNS-0161A (Pack of 2)

Order No.: KPS-0161A

**N** An adjustable dual cutter to quickly cut parallel lines. Rapid adjustment from very fine to 0.5" wide. Order No.: KNS-0088A

Replacement blade for **N** KNS-0088A. Order No.: KPS-0088A

### Equal Spacing Dividers



Equal spacing dividers used for forms design, development of models, map making, surveying, drafting, textile and pattern design, etc. Up to ten equally spaced points may be easily and accurately plotted. The eleven numbered teeth will always divide the distance between the first and last tooth into ten equal parts. The space dividers are ruggedly constructed from stainless steel and the riveted pivot points move with ease to adjust the spacing of the teeth but are firm enough to maintain precise settings. A six inch and a twelve inch model are available.

Six Inch Model: Order No.: WNS-0230A

Twelve Inch Model: Order No.: WNS-0235

### E-Scales

A laser drawn E scale in transparent durable plastic. E scale in letters is from 6 point to 72 point with 4 and 5 point and 6 to 72 point in line graduations. Edges of the scale feature picas in 1/2 picas and inches in 1/8" and 1/16". An agate line scale and point scale are featured in the center of the scale. All scales read vertically top to bottom except the point scale which is bottom to top. Model CNF-1306A measures 10-1/4" (260mm) long and 2" (51mm) wide. All scales are 8" long except the point scale which is 2" long.

Order Model No.: CNF-1306A



### Precision Schaedler Film Scales



Precision translucent film scales manufactured from highly stable polyester material for dimensional stability. Thinner than hair line graduations are easy to read. Two scales are packaged to a set. One scale features points, picas and agates and the other an inch scale in 1/32" and a metric scale in mm. Ideal for use in the darkroom and for reading through a camera ground glass. Readings may be taken through the ruler to avoid parallax errors. Order No.: VNS-0001A

### Tally Counters

Precision tally counters to record counts instantly and automatically. One model fits comfortably in the hand, the other is supplied with a base for easy mounting on a table or counter top. An easy action lever increases the count by one each time it is depressed.



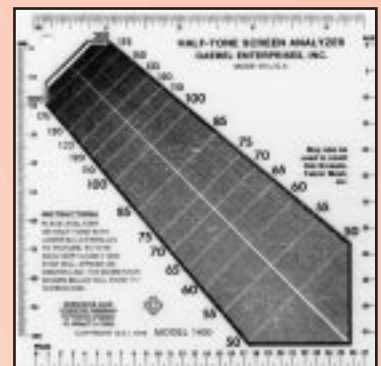
Both units count from 0 to 9999 in increments of 1. A single turn of the side knob resets the counter to zero. The perfect units to simplify repetitive counting operations such as time studies, inventory operations, etc. Avoid the frustration of losing counts through interruptions. The counters are of durable construction with a nickel finish.

Hand Tally Counter, Order No.: WNS-0250A

Tally Counter with Base, Order No.: WNS-0255A

### Halftone and Silk-screen Analyzers

Quickly and easily measure a half-tone or screen size. Simply place the analyzer on the half-tone or silk screen and slowly rotate it until a star appears in the center of the analyzer. The points of the star formed will be in line with the half-tone or screen size as indicated on the scales of the analyzer. The analyzer features a scale for measuring half-tones on the top edge and silk screen sizes on the lower edge. The edges of the analyzer feature an inch scale in 1/32", an agate line scale, a pica scale in half-picas and a millimeter scale in 1/2mm. The analyzer is manufactured from durable laminated plastic for long life and measures 5" x 5" (127mm x 127mm). The analyzer is designed to measure half-tone screens from 50 to 200 and silk screen meshes from 2xx to 25xx.



Order Model No.: CNF-1401A