Dorsey Metrology International

Optical Metrology Division

Contact us for a comparator demonstration.

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Table of Contents / Fast Selection Guide

Models Page # in catalog	14HE Page 2	14H Page 3	16H Page 4 & 5	24P Page 6	32P Page 7	32SS Page 8
Light path	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Screen size	14" (350mm) angled	14" (350mm) vertical	16" (400mm) vertical	24" (600mm) vertical	32" (800mm) vertical	32" (800mm) vertical
Standard image orientation *	Reversed	Erect	Erect	Erect	Erect	Fully Corrected
Stage size	16" x 4"	16" x 4"	18" x 5"	36" x 8"	36" x 8"	36" x 8"
Stage travel:						
X	8" (200mm)	8" (200mm)	10" (250mm)	18" (460mm)	18" (460mm)	18" (460mm)
Y	4" (100mm)	4" (100mm)	6" (150mm)	10" (250mm)	10" (250mm)	14" (355mm)
Z (Focus)	1.5" (38mm)	1.5" (38mm)	2" (50mm)	3" (75mm)	3" (75mm)	3" (75mm)
Weight capacity on stage	50 lbs (23 kg)	50 lbs (23 kg)	150 lbs (68 kg)	500 lbs (227 kg)	500 lbs (227 kg)	500 lbs (227 kg)
Optional stage travel in X axis	Not available	Not available	20" or 24"	24" (600mm)	24" (600mm)	24" (600mm)
Linear scale resolution	0.00025mm/.00001"	0.00025mm/.00001"	0.00025mm/.00001"	0.00025mm/.00001"	0.00025mm/.00001"	0.00025mm/.00001"
Internal edge detection	Optional	Optional	Optional	Optional	Optional	Optional
Motorized and CNC computer control	Not available	Not available	Optional	CNC Computer Control-Optional	CNC Computer Control-Optional	CNC Computer Control-Optional
Coaxial surface illumination	Not available	Not available	Not available	Not available	Not available	Standard
Surface illumination	Optional	Optional	Standard	Standard	Standard	Not applicable
Quick change single lens mount	Standard	Standard	Standard	Not available	Not available	Not available
Multiple lens selector (turret)	Not available	Not available	Not available	Standard	Standard	Standard
Optional lens choices: 1 Lens required	10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x	10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x	5x, 10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x	5x, 10x, 20x, 25x, 50x, 100x, 200x 31.25x, 62.5x	5x, 10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x	10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x
Machine weight (Built to last)	230 lbs (105 kg)	250 lbs (113 kg)	460 lbs (209 kg)	2050 lbs (1338 kg)	3950 lbs (1792 kg)	5100 lbs (2313 kg)
Harsh environment package	Optional	Optional	Optional	Optional	Optional	Optional
Warranty	2 year limited	2 year limited	2 year limited	2 year limited	2 year limited	2 year limited

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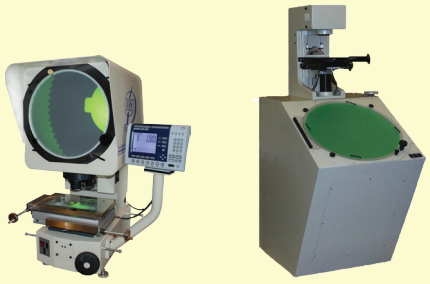

Models Page # in catalog	16VS Page 9	24LD Page 10
Light path	Vertical	Vertical
Screen size	16" (400mm) vertical	24" (600mm) angled
Standard image orientation	Reversed	Reversed
Stage size	15" x 10.5"	15" x 10.5"
Stage travel:		
X	8" (200mm)	8" (200mm)
Y	4" (100mm)	4" (100mm)
Z (Focus)	4" (100mm)	4" (100mm)
Weight capacity on stage / glass	75 lbs (34 kg)/15 lbs (7 kg)	50 lbs (23 kg)/15 lbs (7 kg)
Optional stage travel in X & Y axis	Up to 16" x 6"	Not Available
Linear scale resolution	0.0005mm/.00002"	0.0005mm/.00002"
Internal edge detection	Optional	Optional
Motorized and CNC computer control	Motorized Optional	Motorized Optional
Coaxial surface illumination	Optional	Not available
Surface illumination	Standard	Optional
Quick change single lens mount	Not available	Standard
Multiple lens selector (turret)	Standard	Not available
Optional lens choices: 1 Lens required	10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x	5x, 10x, 20x, 25x, 50x, 100x, 31.25x, 62.5x
Machine weight (Built to last)	375 lbs (170 kg)	385 lbs (175 kg)
Harsh environment package	Optional	Optional
Warranty	2 year limited	2 year limited

Table of Contents

* Image Orientation Explanation

R=R= Erect and correct "fully corrected"
R=Я= Erect and reversed "erect"
R=ʁ= Correct and inverted "correct"
R=ʁ= Reversed and inverted "reversed"

If one of our standard comparator models does not suit your application, and your application requires special fixturing to hold your parts, contact us for a design and build proposal.

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How to Select the Right Optical Comparator

Dorsey Optical Comparators

In the optical field, Dorsey is one of the few remaining domestically manufactured optical comparator product lines. Dorsey optical comparators demonstrate that attention to detail does matter and all are built on the foundation of stability and accuracy. Dorsey has tightened manufacturing tolerances to maintain uncompensated absolute inherent accuracy.

Below we've summarized some of the main items that should be taken into consideration when buying an optical comparator.

Step 1 - Which light path is best for your application, Vertical or Horizontal?

- **Horizontal** light path instruments have a beam of light traveling horizontally across a stage. This type of machine is ideal for large heavy parts and shafts to be held on V blocks or between centers. Typical applications include castings, transmission shafts, thread form measurement and machined components.
- **Vertical** light path instruments have a beam of light traveling vertically. Parts being measured/inspected are placed on a plate of glass, which is on the systems XY stage, that the light beam travels through. Vertical comparators are ideal for flat parts like gaskets, O rings, stamped parts and electronics. Dorsey's line of vertical comparators feature quick release mechanisms on both axes making measurements on our vertical machines much faster than on horizontal machines which feature quick release on only 1 axis.

Step 2 - What screen size and stage size best suits your application?

Screen sizes from 14" to 32" are available. Before choosing a screen size, determine how much of the part REALLY must be viewed at one time. When using a system it is not necessary to view the entire part to measure it. Calculations can be made by dividing the screen diameter by the lens magnification. For example, using a 10X lens on a 16" optical comparator would enable viewing 1.6" of the part on the screen (16"/10=1.6"). Verify that the stage size, travel and weight capacity will accommodate all of the parts that are intended to be measured or inspected. In general, screen sizes 16" and smaller are benchtop units with weight capacities up to 150 pounds.

Step 3 - What lens/lenses you will require?

Follow the chart below to decide what lens will match the tolerances required. A basic rule of thumb is that a typical attentive operator can repeatedly discriminate .004" on the comparator screen. Dividing the "discernible resolution" by the lens magnification determines the minimum resolution attainable for each lens.

LENS MAGNIFICATION	DISCERNABLE RESOLUTION
5X	.0008" (0.020mm)
10X	.0004" (0.010mm)
20X	.0002" (0.005mm)
25X	.00016 (0.004mm)

LENS MAGNIFICATION	DISCERNABLE RESOLUTION
31.25X	.0001" (0.003mm)
50X	.00008" (0.002mm)
62.5X	.00006" (0.0016mm)
100X	.00004" (0.001mm)

Step 4 - What type of readout/software will you require, or will you be using overlays?

If you will be using overlays only, our base models without scales are an ideal cost effective solution.

If measurements are required, select a basic XY digital readout if only positions and distances results are necessary. However, if measurement of circles, angles, and parametric distance is required, then select a readout or M2 software with geometric capability. Repetitive part measurement may encourage the selection of a CNC capable readout. Automatic edge sensing should be considered to eliminate operator subjectivity and increase repeatability and accuracy. See pages 11-13.

Step 5 - What options or tooling will be required?

Repeatability and accuracy will suffer if the workpiece is not properly and securely held. Careful consideration should be given to tooling and to the surface on which you place your comparator. Review pages 14 and 15 for solutions.

For assistance in selecting and configuring the correct Dorsey Comparator to meet your measurement and inspection needs, please contact us at 845-454-3111.

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Model 14HE Horizontal Beam

The 14HE bench top comparator is Dorsey Metrology's basic and most economical comparator with the same high quality features as the other comparators in our product line, but in a smaller package and a lower price. The addition of our extra long life LED surface illumination is another Dorsey innovation.

Features:

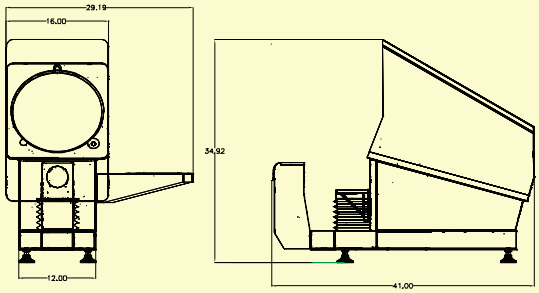
- 14" (350mm) angled high resolution glass screen for optimum viewing with 90 degree cross lines, calibration reticle and chart clips
- Reversed and inverted profile image
- Machined chart ring with vernier protractor, 1 minute graduation facilitates optimal alignment
- Coated telecentric parfocal optics
- Quick change single lens mount
- Integrated hood
- Solid cast iron nickel plated stage
- 3 axis solid rail crossed roller bearings
- Single universal dovetail stage
- 16" x 4" overall stage size
- 8" / 200mm X axis travel with "glide release"
- 4" / 100mm Y axis travel (vertical movement/rise & fall)
- 50 lbs capacity
- ± 5 degree light source helix adjustment
- NIST traceable calibration certificate
- 2 year limited warranty

Optional Features:

- Internal edge detection
- LED surface illumination
- Choice of readout options see pages 11-13
- Output for electronic rotary screen protractor (Q axis) on readout with selectable 1 minute or 1/100 of a degree resolution
- Harsh Environment package

Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: 2-Triple LED lights
Screen Size	14” (350mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 16” x 4” single dovetail
Stage Travel	X = 8” (200mm) Y = 4” (100mm) Focus = 1.5" (38mm)
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	10x, 20x, 25x, 31.25x, 50x, 62.5x, 100x
Optical Accuracy	Within +/- .10% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	230 lbs/105 kg

DIMENSIONS



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Benchmark 14H Horizontal Beam

The Benchmark 14H is an Erect Image bench top comparator and is another example in our expanding range of products. This new comparator has the same high quality features as the current product line with an erect projection image, with our "ultra-precision" crossed roller bearing stage system, but in a smaller package. The measurement scales have zero backlash and are mounted in the center of the stage travel that provides maximum measurement accuracy. The optional extra-long life LED surface illumination is another Dorsey innovation.

Features:

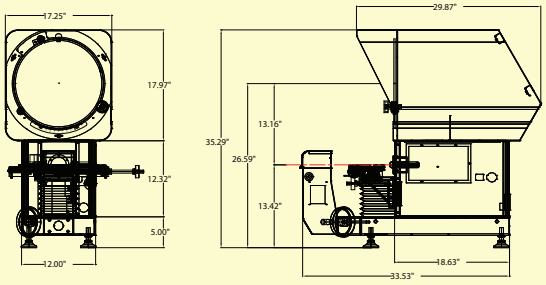
- Erect and reversed profile image
- 14" (350mm) vertical screen for optimum viewing, high resolution ground glass screen with 90 degree cross lines, with calibration reticle and chart clips
- Machined chart ring with vernier protractor, 1 minute graduation facilitates optimal alignment
- Coated telecentric parfocal optics
- Quick change single lens mount
- Integrated hood
- Solid cast iron nickel plated stage
- 3 axis solid rail crossed roller bearings
- Single universal dovetail stage
- 16" x 4" overall stage size
- 8" / 200mm X axis travel with "glide release"
- 4" / 100mm Y axis travel (vertical movement/rise and fall)
- 50 lbs capacity
- ± 5 degree light source helix adjustment
- NIST traceable calibration certificate
- 2 year limited warranty

Optional Features:

- Internal edge detection
- LED surface illumination
- Choice of readout options see pages 11-13
- Output for electronic rotary screen protractor (Q axis) on readout with selectable 1 minute or 1/100 of a degree resolution
- Harsh Environment package

Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: 2-Triple LED lights
Screen Size	14” (350mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 16” x 4” single dovetail
Stage Travel	X = 8” (200mm) Y = 4” (100mm) Focus = 1.5" (38mm)
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	10x, 20x, 25x, 50x, 100x
Optical Accuracy	Within +/- .10% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	250 lbs/113 kg

DIMENSIONS



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The Dorsey Advantage

Construction features of our Model 16H

Focus travel is always "optically coaxial"
Unique design features an intermediate plate that allows the focus axis to travel independently of the X axis

Ultra Precision Cast Iron Stage
Large capacity 10" x 6" travel - 150 lbs stage system
Optional 20" or 24" X axis travel
Solid cast iron - no aluminum

X Axis glass scale has zero backlash and is mounted directly under focal plane to greatly increase accuracy

Lens is mounted to cast iron nickel plated stage - not to sheet metal case

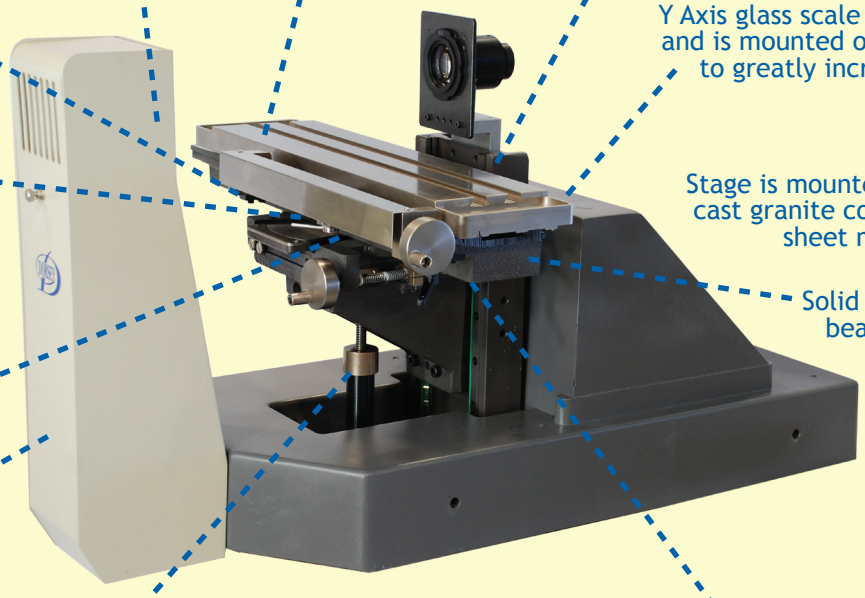
Y Axis glass scale has zero backlash and is mounted on lens center line to greatly increase accuracy

Single hand quick release on X axis

Stage is mounted to independent cast granite composite base not sheet metal case

Both profile and surface illumination bulbs are located in lamphouse

Solid rail crossed roller bearings in all axes



True parfocal helix adjustment ±15 degree with 5 minute vernier

Case fabrication is powder coated not painted

Y axis drive is located directly under the center of gravity, and uses a composite steel/Delrin bevel gear set for accurate and silent operation

For improved stability, the weight bearing stage base is longer than stage top

Available with internal edge sensing ("IED")

This feature provides automatic edge detection without the viewing obstruction of a plexiglass arm on the screen. The IED target is aligned directly behind the screen crossline.

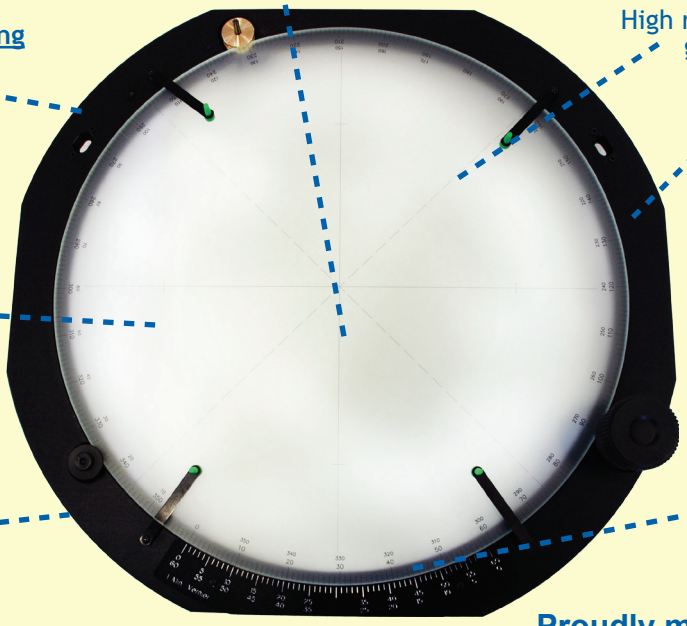
- IED is more accurate because the image is "read directly and is not diffused through ground glass screen.
- IED is also not subject to the stability and rigidity of a plastic arm, our IED sensor cannot be bumped out of alignment under normal use.

Standard with Machined Chart Ring

Screen is mounted in precision machined chart ring for increased rigidity, optical accuracy, and improved protractor operation

High resolution lapped glass screen

Recessed screen protects damage and eliminates contamination of internal optics



Built in calibration reticle for easy magnification verification

Large format vernier protractor with one minute graduations

Machined chart ring with recesses screen protects internal optics and facilitates the alignment of the screen to the optical axis

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Model 16H Horizontal Beam

This extremely versatile measurement instrument features a robust cast granite composite base and our proven cast iron "ultra precision" stage system. This comparator comes standard with integrated fiber optic surface illumination. Measurement scales are mounted in the center of travel with zero backlash. A variety of readout options combine to make this one of the most accurate and versatile horizontal benchtop comparators.

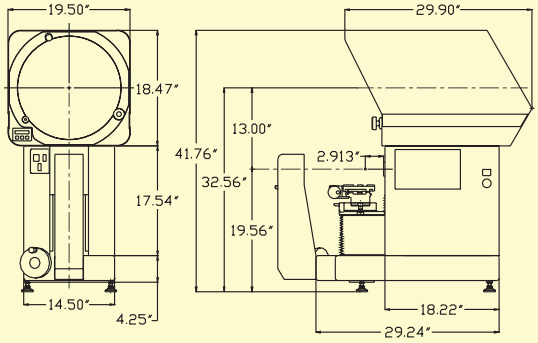
Features:

- 16" (400mm) Vertical screen for optimum viewing
- Erect and reversed profile image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Machined chart ring with vernier protractor, 1 minute graduation
- Coated telecentric parfocal optics
- Quick change single lens mount
- Fiber optic surface illumination
- Integrated hood
- Solid cast iron nickel plated stage
  - 3 axes solid rail crossed roller bearings
  - Twin universal dovetails
  - 18" x 5" overall size
  - 10" X axis travel with “glide release”
  - 6" Y axis travel (vertical movement/rise & fall)
  - 150 lbs capacity
  - ±15 degree true parfocal helix stage adjustment, with 5 minute vernier
- NIST traceable calibration certificate
- 2 Year limited warranty

Optional Features:

- Internal edge detection
- Swing away lamp house arm
- 20" or 24" extended stage travel on "X" axis (50 lbs capacity), 5" Y axis travel (vertical movement Rise & Fall)
- Choice of readout options see pages 11-13
- Motorized and CNC computer controlled systems, 50 lbs capacity
- Output for electronic rotary screen protractor (Q axis) with selectable 1 minute or 1/100 of a degree resolution
- Harsh Environment package
- 3 axes of measurement

DIMENSIONS



Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: Built-in 24V/250W via fiber optics
Screen Size	16” (400mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 18” x 5”, twin dovetail
Stage Travel	X = 10” (250mm) Y = 6” (150mm) Focus = 2” (50mm)
Stage Options	Optional increase of stage travel to 20” (500mm) or 24” (600mm) on X axis
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	5x, 10x, 20x, 25x, 31.25x, 50x, 62.5x, 100x
Optical Accuracy	Within +/- .10% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	460 lbs/209 kg

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Model 24P Horizontal Beam

The 24P was designed to be an all purpose measurement/inspection instrument capable of performing both light and heavy duty tasks. Choose any lens system to customize this machine to match your requirements.

Features:

- 24" (600mm) Vertical screen for optimum viewing
- Erect and reversed profile image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Machined chart ring with vernier protractor, 1 minute graduation
- Coated telecentric parfocal optics
- 3 position rotary lens & condenser turret (4 position optional)
- Quartz halogen profile light source 24V, 150W
- Bright 250W fiber optic surface illumination
- Solid cast iron nickel plated stage
  - Triple universal dovetails
  - 36" x 8" overall size
  - 3 axis solid rail crossed roller bearings
  - 500 lbs capacity
  - 18" X axis motorized travel
  - 10" Y axis motorized travel
  - Linear scale resolution 0.00025mm/.00001"
  - ±15 degree true parfocal helix stage adjustment, with 5 minute vernier
  - Joystick control, computerized microstep motor controller with X and Y axes & focus
- Integrated hood
- NIST traceable calibration certificate
- 2 Year limited warranty

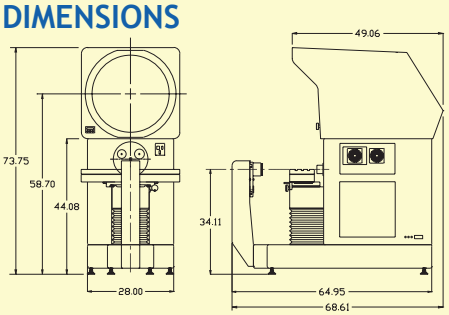
Optional Features:

- Internal edge detection
- Nikon optics
- Output for electronic rotary screen protractor (Q axis) with selectable 1 minute or 1/100 of a degree resolution
- Choice of readout options see pages 11-13
- CNC computer controlled readout systems
- 24" extended stage travel on "X" axis
- Extra bright through lens surface illumination with Nikon lens option
- Harsh Environment package
- Extended hood & curtains

Optional: OPTICS BY Nikon

Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: Built-in 24V/250W via fiber optics
Screen Size	24” (600mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 36” x 8”, triple dovetails
Stage Travel	X = 18” (460mm), Motorized Y = 10” (250mm), Motorized Focus = 3” (75mm), Motorized
Stage Options	Optional increase of stage travel to 24” (600mm) on X axis
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	5x, 10x, 20x, 31.25x, 25x, 50x, 62.5x, 100x, 200x
Optical Accuracy	Within +/- .10% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	2950 lbs/1338 kg

DIMENSIONS



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Model 32P Horizontal Beam

The 32P was designed with crisp, clear telecentric optics and a precision solid cast iron stage to be an instrument capable of handling almost any measurement/inspection requirement. This welded steel fabrication assures years of accurate, trouble free service.

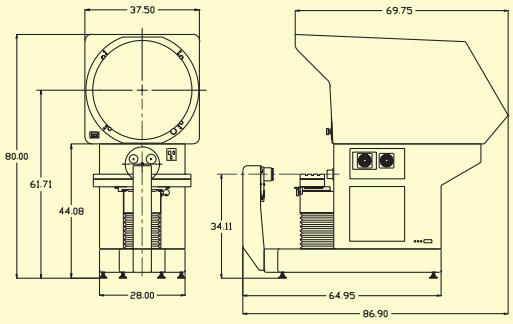
Features:

- 32" (800mm) Vertical screen for optimum viewing
- Erect and reversed profile image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Machined chart ring with vernier protractor, 1 minute graduation facilitates optimal alignment
- Coated telecentric parfocal optics
- 3 position rotary lens & condenser turret
- Quartz halogen profile light source 24V, 150W
- Bright 500W fiber optic surface illumination
- Linear Scale Resolution 0.00025mm/.00001"
- Solid cast iron nickel plated stage
  - Triple universal dovetails
  - 36" x 8" Overall size
  - Solid crossed roller stage bearings
  - 500 lbs capacity
  - 18" X Axis motorized travel
  - 10" Y Axis motorized travel
  - ±15 Degree true parfocal helix stage adjustment, with 5 minute vernier
  - Joystick control, computerized microstep motor controller with X and Y axes & focus
- Integrated hood
- NIST traceable calibration certificate
- 2 Year limited warranty

Optional Features:

- Internal edge detection
- Output for electronic rotary screen protractor (Q axis) with selectable 1 minute or 1/100 of a degree resolution
- Choice of readout options see pages 11-13
- CNC computer controlled readout systems
- 24" extended stage travel on "X" axis
- Harsh Environment package
- Extended hood & curtains

DIMENSIONS



Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: Two built-in 24V/250W via fiber optics
Screen Size	32” (800mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 36” x 8”, twin dovetail
Stage Travel	X = 18” (460mm), Motorized Y = 10” (250mm), Motorized Focus = 3” (75mm), Motorized
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	5x, 10x, 20x, 25x, 31.25x, 50x, 62.5x, 100x
Optical Accuracy	Within +/- .10% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	3950 lbs/1792 kg

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32SS Horizontal Beam

The 32SS offers the same quality features as the 32P Horizontal Beam comparator, however the 32SS offers an offset screen for working with large overlay applications. This machine has an erect correct image, a 9.5" working distance and through the lens surface illumination.

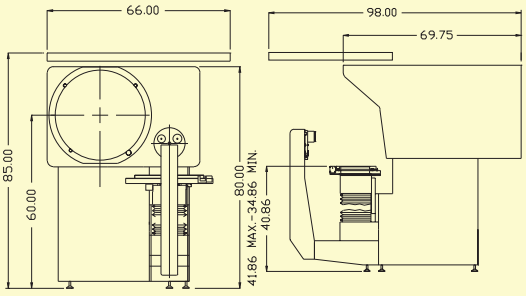
Features:

- 32" (800mm) Vertical screen for optimum viewing of erect and correct image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Machined chart ring with vernier protractor, 1 minute graduation facilitates optimal alignment
- 6 position motorized lens turret with selector switch
- Coated telecentric parfocal optics
- Floor leveling screws and heavy duty steel feet
- Linear Scale Resolution 0.00025mm/.00001"
- Solid cast iron nickel plated stage
  - Solid crossed roller stage system
  - Triple universal dovetails
  - 36" x 8" Overall size
  - 500 lbs capacity
  - 18" X Axis motorized adjustment
  - 14" Y Axis motorized adjustment
  - Joystick control in X, Y and Focus Axes
  - ±15 Degree true parfocal helix stage adjustment, with 5 minute vernier
- Quartz halogen light source fan cooled and electronically dimmed for long lamp life
- Extra bright through lens surface illumination via LED
- NIST traceable calibration certificate
- 2 Year limited warranty

Optional Features:

- External edge detection
- Internal edge detection
- Output for electronic rotary screen protractor (Q axis) with selectable 1 minute or 1/100 of a degree resolution
- Choice of readout options see pages 11-13
- CNC computer controlled readout systems
- 24" extended stage travel on "X" axis
- Harsh Environment package
- Extended hood & curtains

DIMENSIONS



Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: LED Lights
Screen Size	32” (800mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 36” x 8”, triple dovetails
Stage Travel	X = 18” (460mm), Motorized Y = 14” (355m), Motorized Focus = 3” (75mm), Motorized & 9.5" of working distance
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.00025mm/.000010”
Repeatability of Scales	+/- 1 Scale count (0.0005mm/.00002”)
Coated Telecentric Lenses	10x, 20x, 25x, 31.25x, 50x, 62.5x, 100x
Optical Accuracy	Within +/- 0.1% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	5100 lbs/2313 kg

Proudly made in the USA

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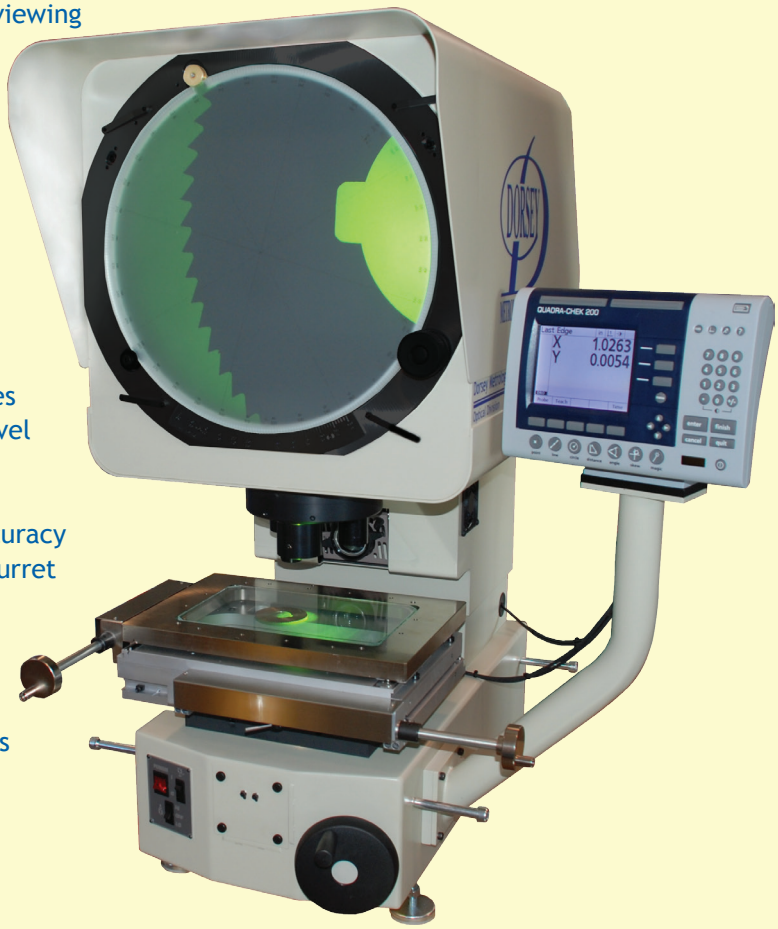
Model 16VS Vertical Beam

This dynamic vertical optical system is the first of its kind manufactured in the USA. This system allows a much greater stage capacity up to 75 pounds (15 lbs in the center of the glass plate) with optional stage travel up to 16" x 8".

Features:

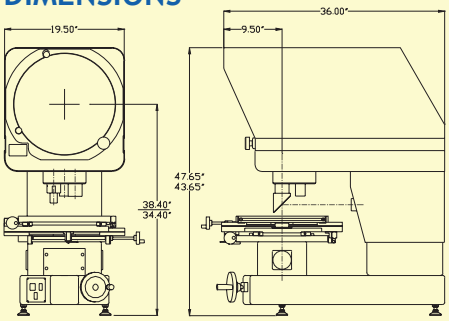
- 16" (400mm) Diameter vertical screen for optimum viewing
- Reversed and inverted image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Machined chart ring with vernier protractor
- High specification table (Part # 8x4MN-1)
  - 75 lbs stage capacity (15 lbs on glass)
  - 15" x 10.5" overall size of stage
  - 7" x 4.5" glass insert
  - 8" x 4" travel
  - 4" focal distance in the Z axis
  - Crossed rail roller bearings on all measuring axes
  - Multiple stage options with up to 16" x 8" of travel
- Quartz halogen light source. Fan cooled and electronically dimmed for long lamp life
- Dynamic optical head to maintain constant mass accuracy
- Built in rotary 3 lens turret & 2 position condenser turret
- Diascopic surface illumination is standard
- Welded plate steel case fabrication
- Coated telecentric parfocal optics
- Lens choices of 10X through 100X
- Linear Scale Resolution 0.0005mm/.00002" X & Y Axis
- Choice of readout or full CNC computerized systems available
- NIST traceable calibration certificate
- 2 Year limited warranty



Optional Features:

- Motorized stage
- Internal edge detection
- Coaxial surface illumination
- Output for electronic rotary screen protractor (Q axis) with selectable 1 minute or 1/100 of a degree resolution
- Choice of readout options - pages 11-13
- For choices of other vertical stages see page 16
- Harsh Environment Package

DIMENSIONS



Technical Specification	
Illumination	Profile: Built-in 24V/150W direct collimated halogen Surface: 150W direct halogen
Screen Size	16" (400mm) Ground glass with cross-lines
Stage	Cast iron, nickel plated, 8" x 4", twin dovetail
Stage Travel	X = 8" (200mm) Y = 4" (100mm) Focus = 4" (100mm)
Stage Accuracy	Within +/- 0.004mm +[(L/20).001]
Linear Scale Resolution	Standard: 0.0005mm/.00002" (X & Y axis)
Repeatability of Scales	+/- 1 Scale count (0.001mm/.00004")
Coated Telecentric Lenses	10x, 20x, 25x, 31.25x, 50x, 62.5x, 100x
Optical Accuracy	Within +/- 0.1% Profile, +/- .15% Surface
Power Requirements	120V or 240V AC, 50/60 Hz, 10 Amp
Weight	375 lbs/170 kg

Proudly made in the USA

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Model 24LD Vertical Beam

The 24LD is a special application large angled screen comparator with a compact size. The 24LD is an extremely versatile machine capable of measuring/inspecting a wide variety of parts. Typical applications include electronic components, stampings, surgical equipment, molded and extruded parts as well as machined parts of all shapes. The 24" angled screen is also ideal for overlays, measurement, inspection, tracing magnified drawings on the screen and reverse engineering projects.

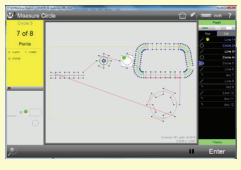
Features:

- 24" (600mm) Angled screen for optimum viewing of a reversed image
- High resolution ground glass screen with calibration reticle, 90 degree cross lines and chart clips
- Output for electronic rotary screen protractor with selectable 1 minute or 1/100 of a degree resolution
- Precision 8" x 4" travel stage
- Quartz halogen light source. Fan cooled and electronically dimmed for long lamp life
- Coated telecentric parfocal optics
- Optional surface illumination
- Optional internal edge detection available
- Welded plate steel case fabrication
- NIST traceable calibration certificate
- 2 Year limited warranty

Special Order Item

CNC Systems

All Dorsey Metrology optical comparators are available with full CNC capability using either HEIDENHAIN or Metlogix M2 display technology. The CNC option enables automatic and repetetive part measurement, boosting productivity, and helping to reduce operator subjectivity. Auto-probing via Dorsey's internal edge detection system introduces the ability to automatically add probe points to any measurement feature.



The MetLogix CNC option, provides closed loop control of optical comparators .

"Always Recording" programming environment.

The quick program conversion mechanism, combined with full CNC playback, including programmable zoom positions, light control, and autofocus, ensures that the learning curve is low, and the productivity potential high.

DXF Auto Programming: Easily convert dxf drawing files into M2 part programs using the DXF import and Auto Program modules. Simply open the desired dxf file, trim out any unwanted dxf features or elements, perform your datum operations on the dxf features, press play, and your program is generated.

HEIDENHAIN options

Saving of measurement points

Manual or automatic measurement of points. With automatic measurement, the edge to be measured is detected automatically by the active tool. The result of this feature (saving of the measurement point) is a high degree of repeatability and at the same time a low measuring uncertainty.

CNC axis-control (CNC option)

Positioning of the X,Y axes, which makes automated measurement of any mechanical parts possible.

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Digital Readout Options

ND 120 Quadra Chek

The ND 100 digital readouts have a monochrome flat-panel screen for displayed values, dialogs and inputs, graphics functions and soft keys. With its sturdy housing and splash-proof membrane keyboard, the ND 120 is built for the workshop. It handles 2 or 3 axes, is capable of measuring complex geometries, graphical display of measured parts, linear, segmented and nonlinear error compensation, and features USB output.

ND 1200 Quadra Chek

The ND 1200 QUADRA-CHEK digital readouts have a monochrome flat-panel screen for displayed values, dialogs and inputs, graphics functions include automatic calculation of radii, circles, angles, lines, points, and distance, and function as measuring computers for 2-D geometries.

Features:

- X and Y axes digital display
- Optional Q axis
- RS-232C PC communication interface
- USB port for printers or flash memory connectivity
- Incremental and absolute modes
- Inch/Metric selectable
- Min/max value storage
- LED display
- Geometric functions
- Optional edge detection

ND 1300 Quadra Chek

The digital readouts of the ND 1300 series are characterized by the large, color touchscreen. The innovative operator guidance provides self-explanatory information about the various functions. Geometric functions include automatic calculation of radii, circles, angles, lines, points and distance.

Features:

- X and Y axis digital display
- Optional Q axis
- RS-232C PC communication interface
- USB port for printers or flash memory connectivity
- Incremental and absolute modes
- Inch/Metric selectable
- Min/max value storage
- Touchscreen display
- Geometric functions
- Optional edge detection
- CNC motion control option

HEIDENHAIN

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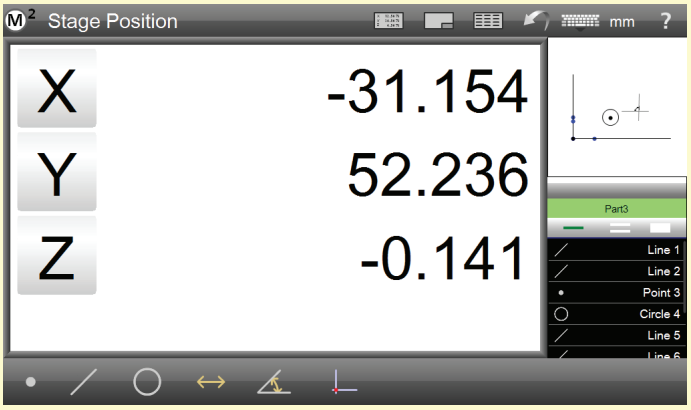
METLOGIX M2 SOFTWARE

Metlogix M2 software installed on an All-in-one touch screen PC with Microsoft Windows 7 Home Premium 64bit edition. Microsoft Windows 7 Professional or Ultimate are available upon request.

Metlogix M2 Measuring Solution Features

- Clean, intuitive design
- Available in horizontal or vertical formats
- Support for optical edge or crosshair measuring systems
- Designed for multi-touch software control
- Advanced crosshair probe toolbox
- Graphics based "Part View" constructions
- Feature detail graphics
- Geometric tolerancing
- Part programs and playback
- Reports

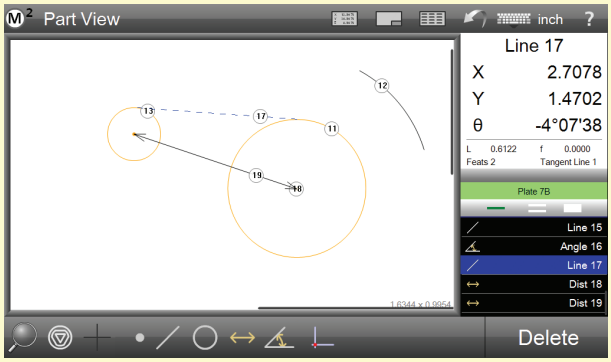


Graphics-based "Part View" Constructions

Generate popular construction types, like Distances and Tangent Lines, from within the graphical part view itself. Constructions with multiple sub-types can be toggled quickly with the change feature type command.

Supported construction types include:

- Average
- Mid/Center Point(s)
- End Point(s)
- Intersections
- Shortest Distance
- Farthest Distance
- Tangent Line(s)
- Gage Circle(s)
- Bolt Circle
- Angle Compliments
- Perpendicular/Parallel Line(s)
- Offset Skew Lines

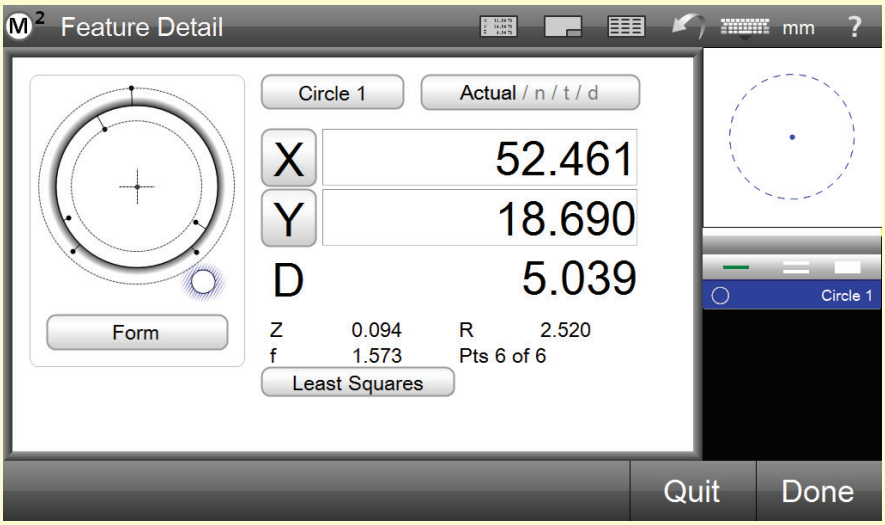


MetLogix CNC Option

The **MetLogix CNC option**, provides closed loop control of optical comparators. The CNC option enables automatic and repetitive part measurement, boosting productivity, and helping to reduce operator subjectivity.

Feature Detail Graphics

Individual feature views provide informative drawings diplaying point cloud distributions, as well as nominal deviaions, and tolerance results. Scroll through your measured features list from this view for a feature by feature display of Actual, Nominal, Tolerance, and Deviation results. Set the desired data fit type from the “Actual” screen using the “fit toggle” button.



Scroll through your measured features list from this view for a feature by feature display of Actual, Nominal, Tolerance, Deviation, and Data Fit Type information.

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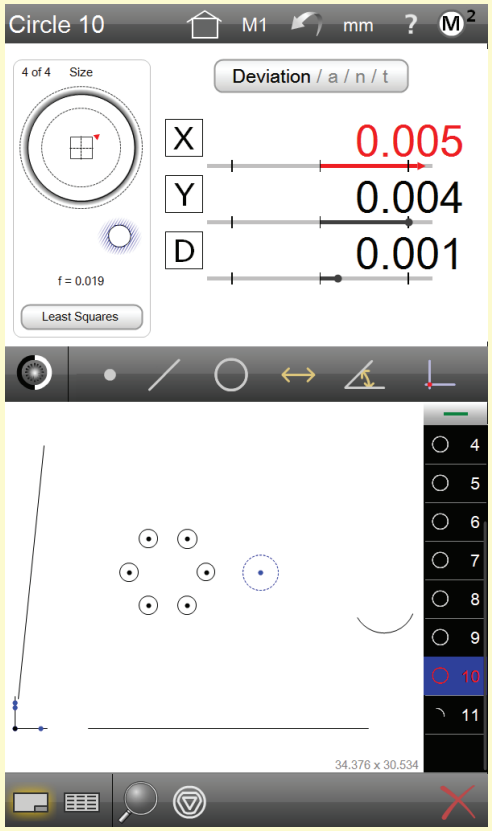
M2 - Geometric Tolerancing



You may measure features, set nominals, apply tolerances and view deviation results with only a few quick clicks. You may also apply a variety of popular tolerance types to features in the standard "feature-to-feature" fashion, or utilize the "place tolerancing" system for applications where tolerances are specified in a block tolerance style call out. For these cases the M2 software let's you enter and apply universal tolerance values according to your feature resolution groupings.

Supported tolerances include:

- X/Y/Z Positional
- Diameter/Radius/Length/Width Size
- Theta (Angle)
- Form
- Parallelism
- Angularity
- True Position (LMC/MMC Modifiers)
- Straightness
- Perpendicularity
- Roundness
- Concentricity
- Runout

MetLogix

Lens Technical Specifications

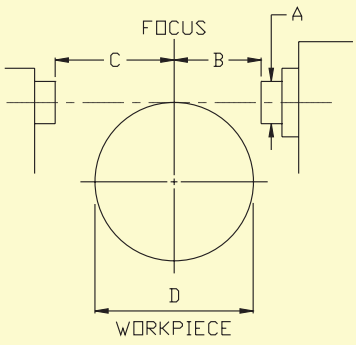
14" SCREEN			
LENS MAGNIFI-CATION	METRIC (mm)		
	A	B	D
5X	58	81	162
10X	54	81	162
20X	47	81	162
25X	40	70	140
31.25X	34	56	112
50X	28	51	102
100X	27	43	86

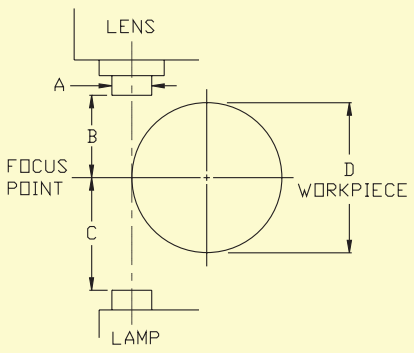
16" SCREEN			
LENS MAGNIFI-CATION	METRIC (mm)		
	A	B	D
5X	106	138	276
10X	58	80	160
20X	40	82	164
25X	40	70	140
31.25X	35	56	112
50X	30	53	106
62.5X	30	50	100
100X	30	43	86

24" SCREEN			
LENS MAGNIFI-CATION	METRIC (mm)		
	A	B	D
5X	158	220	440
10X	79	138	276
20X	68	138	276
25X	68	118	236
50X	68	100	200
100X	68	48	96
200X	20	24	48

32" SCREEN			
LENS MAGNIFI-CATION	METRIC (mm)		
	A	B	D
5X	196	315	630
10X	117	158	316
20X	117	109	218
25X	117	92	184
31.25X	117	79	158
50X	117	60	120
62.5X	117	52	104
100X	117	48	96

NIKON 20 +			
LENS MAGNIFI-CATION	METRIC (mm)		
	A	B	D
5X	120	73	146
10X	70	79	158
20X	50	85	170
50X	50	51	101
100X	50	51	101





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Accessories & Calibration Tools

Part # ACC-CAB27

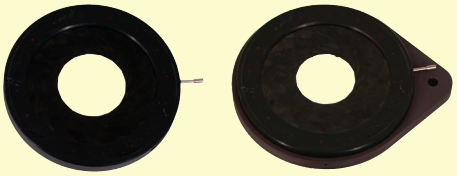
Heavy duty locking metal stand

- 28.5" x 22.3" x 27"
- Laminate top
- 2 Heavy duty drawers 5" & 11" deep
- Up to 1000 lbs. capacity

Part # ACC-CAB32

Stand with shelf

- 24" x 36" x 32"
- Solid steel construction
- Up to 350 lbs capacity
- Durable finish



Part # ACC-16ID Part# ACC-24/32ID

Iris Diaphragm

- Part #ACC-16ID for 16" benchtops
- Part #ACC-24/32ID for 24" & 32" floor models
- Mounts over condenser
- Used to improve collimation and reduce glare

Part # ACC-16GF Part# ACC-24/32GF

Green Filter

- Part #ACC-16GF for 16" benchtops
- Part #ACC-24/32GF for 24" & 32" floor models
- Mounts over condenser
- Monochromatic filter increases contrast and reduces optical aberrations while reducing operator eye fatigue

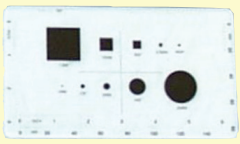
Part# ACC-16PF

Polarizing Filter

- Part #ACC-16PF for 16" benchtops
- Part #ACC-24/32PF for 24" & 32" floor models
- Mounts over condenser
- Used to reduce glare on ground parts
- Improves contrast on translucent plastic

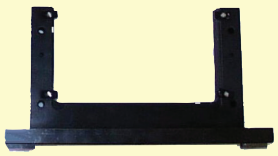
Glass reading master

- Part #ACC-MAGMM
- 3" X 16" Overall size
- 14" scale
- Fitted storage box
- NIST Traceable accuracy certification



Calibration projection master

- Part #ACC-MAGPM
- Chrome targets with 6" x 3" rule
- Inch/metric graduations
- Fitted storage box
- NIST Traceable accuracy certification



Projection master stand

- Part #ACC-MAGPMF
- Designed to accurately hold and protect ACC-MAGPM during use on horizontal optical comparators
- Precision ground base
- Wooden storage box

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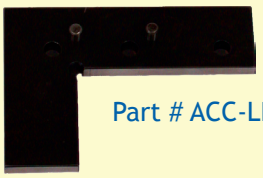
Work Stage Tooling

For special fixtures contact Dorsey Metrology or your local Dorsey representative.

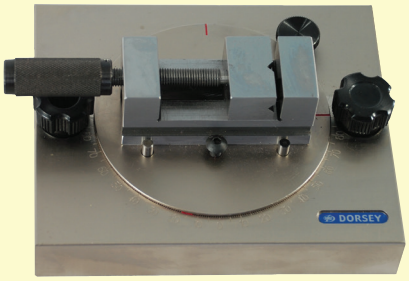
Part # ACC-BF



Part # ACC-LBF

Fixture Banking Plates

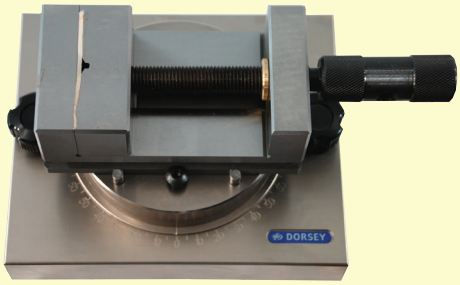
- Part# ACC-BF (6" x 1")
- Part# ACC-LBF (3" x 2.5")
- Precision ground steel
- Reversible for left or right bank
- Can be used on horizontal stages



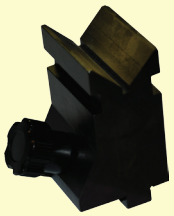
Part # ACC-RV1

Rotary Vice Stage

- Part# ACC-RV1 jaw opening of 1.25"
  Part# ACC-RV2 jaw opening of 2.12"
- Precision ground steel
- Positions vice in X, Y or Z axis
- 360 degree rotation with 1 degree graduation



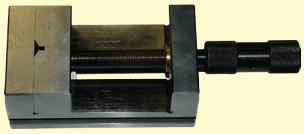
Part # ACC-RV2



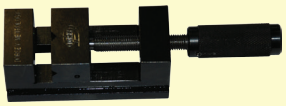
Part # ACC-VB1

Precision V Block

- Part# ACC-VB1
- Precision V block
- Hardened and ground steel
- 90 degree V 2.7" high



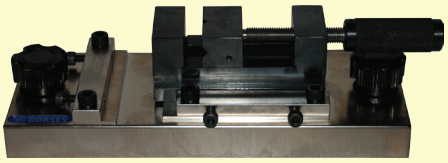
Part # ACC-V2
(Only vertical V)



Part # ACC-V1

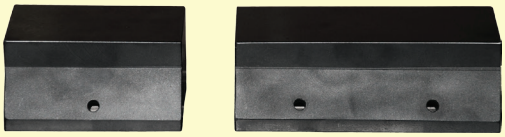
Precision Fixture Vice

- Part# ACC-V1 jaw opening of 1.25"
- Part# ACC-V2 jaw opening of 2.12"
- Precision ground steel
- Vertical and horizontal V

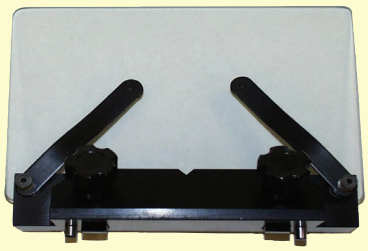


Precision Vice Stand

- Fixture to hold vice in 2 axes
- Part# ACC-PVS (ACC-V1 sold separately)

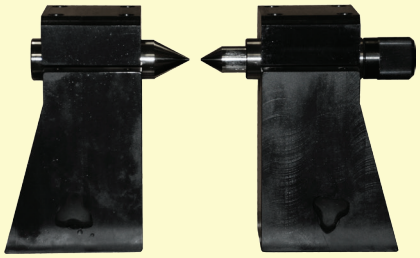


Part # ACC-VF7X5

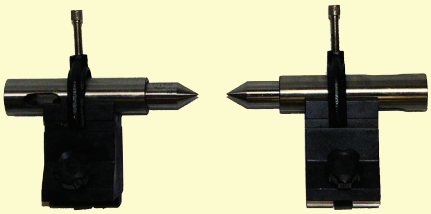


Vertical Glass Fixture

- Part# ACC-VF7x5
- Used to mount flat parts on horizontal comparators
- 7" x 5" glass
- 2 Chart clips & V

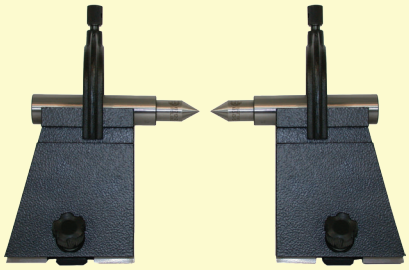


Part # ACC-VBC2.5



Precision V Block & Center Kit

- Part# ACC-VBC2.5
- Matched ground hardened steel
- 90 degree V
- 2.7" tall
- 1" diameter centers with interchangeable Morse taper insert



Fixture Blocks

- Used to make custom fixtures
- Precision machined steel
- Available :
  2" Part #ACC-FB2
  4" Part #ACC-FB4
  6" Part #ACC-FB6
  8" Part #ACC-FB8

Bench Centers

- Part# ACC-VBC5.38
- Matched ground hardened steel
- 90 degree V
- 5.385" tall
- 3/4" diameter centers with fine adjustment
- 1.25" fixed center

Heavy Duty V Block & Center Kit

- Part# ACC-VBCHD
- Matched ground cast iron
- 90 degree V
- 5" tall
- 1" diameter centers with interchangeable Morse taper insert

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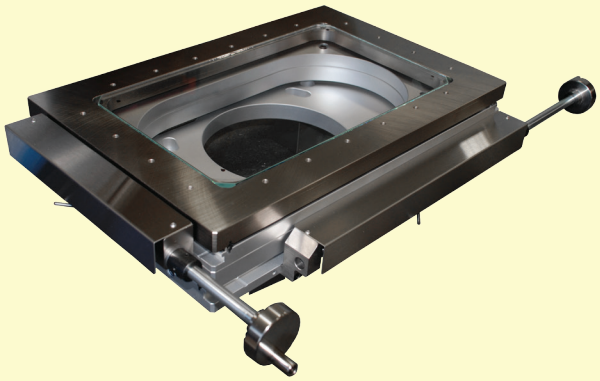
Ultra Precision Coordinate Staging

These precision coordinate stages can be used for optical comparators, vision systems or microscopes. Each stage features heavy duty crossed roller bearings.

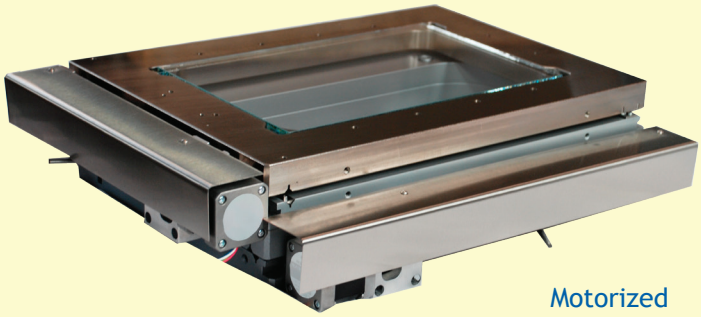
Features:

- Solid or glass plate stages available
- High precision solid rail crossed roller bearings
- Hard nickel plated surfaces
- Fixturing holes with universal spacing
- Quick release on both axis on all manual stages
- Static axis bias on stage drives increases accuracy
- Universal mounting options fit many existing systems
- Scale resolution (0.5 micron is standard)
- Motorized versions available with stepper
- Motorized versions available with limit switches
- Accuracy formula +/- .004 +[(L/20).001]
- NIST traceable calibration certificate
- 2 Year Warranty

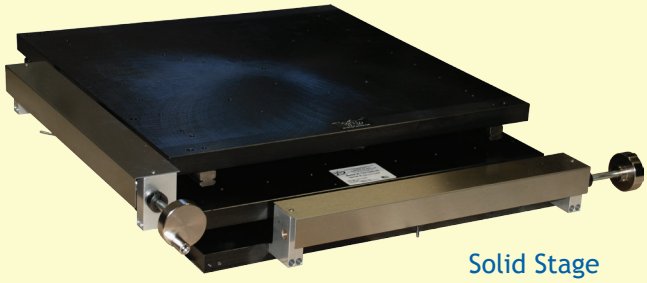
Static fixture plate



Manual Stage



Motorized



Solid Stage

Configuring a stage part number

- Select stage travel
- After stage travel, add MN for manual or MO for motorized (Special cables, controls, and joysticks priced separately).
- After MN or MO add -05 for scales
- Example: 8X4MN-05 = 8" X 4" manual stage with scales

TECHNICAL SPECIFICATIONS				STAGE TRAVEL	
STAGE TRAVEL (X/Y)	WEIGHT CAPACITY	FRAME SIZE	GLASS PLATE SIZE	MANUAL	MOTORIZED
Static fixture plate = SFP	* 75 lbs	11" x 7.4"	7" x 4.5"	Not Available	Not Available
6" x 4"	* 125 lbs	15" x 10.5"	11" x 7"	Available	Available
8" x 4"	* 125 lbs	15" x 10.5"	11" x 7"	Available	Available
8" x 6"	* 125 lbs	15" x 15"	10.5" x 10.5"	Available	Available
8" x 8"	* 125 lbs	15" x 15"	10.5" x 10.5"	Available	Available
12" x 4"	* 65 lbs	16.5" x 7.4"	13.5" x 4.5"	Available	Available
12" x 6"	* 65 lbs	16.5" x 7.4"	13.5" x 4.5"	Available	Available
12" x 12"	* 65 lbs	21" x 21"	14.9" x 14.9"	Available	Available
13" x 13"	125 lbs	20" x 20"	Solid stage only	Available	Available
16" x 6"	* 125 lbs	23" x 15"	18.5" x 10.5"	Available	Available
16" x 8"	* 125 lbs	23" x 15"	18.5" x 10.5"	Available	Available

* only 15 lbs on center of glass

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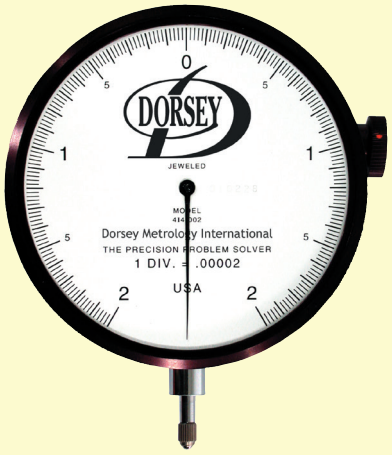
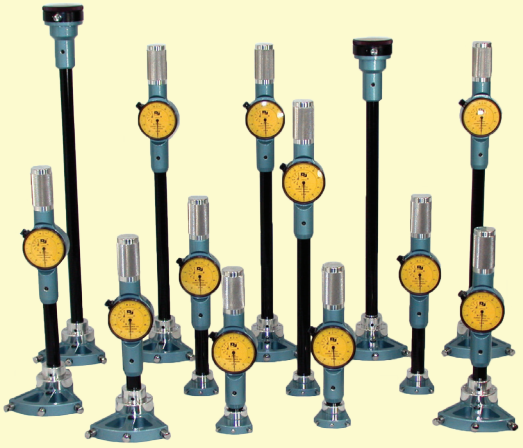
Dorsey Metrology International
Website: www.dorseymetrology.com
Tel: (845) 454-3111 Fax: (845) 454-3888
53 Oakley Street, Poughkeepsie, NY 12601

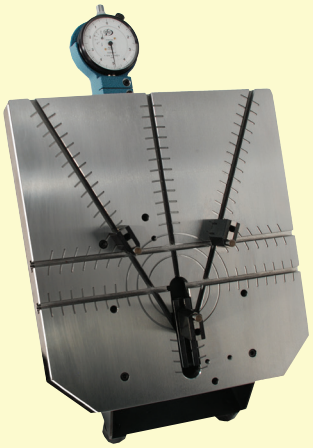
Discover the Dorsey Difference!



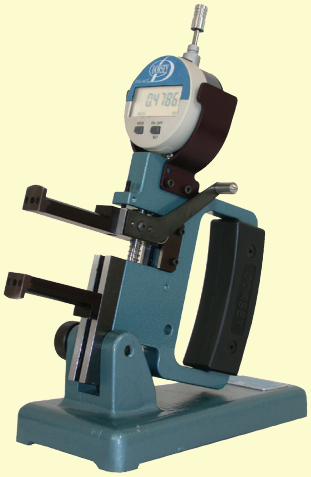
High Amplification Dial Indicators
Graduation as fine as .00002" or 0.0005mm



Standard Bore Gages
Time proven design made better by Dorsey



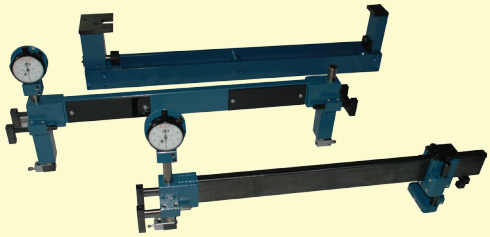
ID/OD Bench Gages
3 point or 2 point gaging available



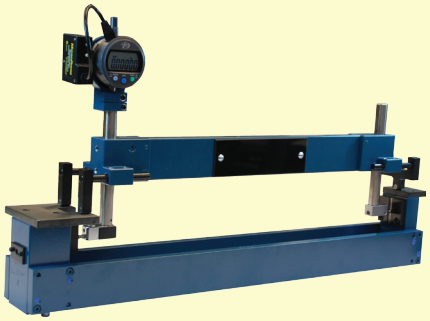
Internal Groove Gage
DYN Groove Gage with 48502 Base

SSG Snap Gages
High accuracy multiple application gages

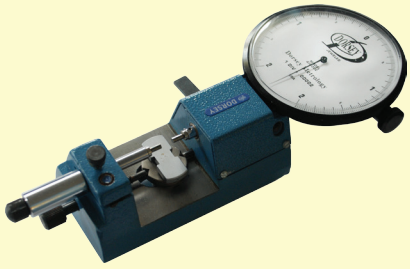
LR SDN Snap Gages
Long Range Snap Gage



Large Diameter ID/OD Gages
Largest selection of fixed and adjustable models



LDF Series Large Diameter Gage
For ID or OD applications. Digital or dial indicators available



J-2 Jaw Gages
Ideal for screw machine and small parts applications

To receive the Dimensional Measurement Instruments Catalog contact Dorsey Metrology or your local Dorsey representative.

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Catalog #: C 2013 OMD-1
Printed in U.S.A.

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