Starrett®

Starrett® GLOBAL

Starrett's success as a global manufacturer began in the 1950's with the establishment of facilities in Brazil and the U.K. Today, Starrett has nine manufacturing locations worldwide: Brazil, The U.K., China, The Domincan Republic, and five in the United States.

Regardless of the country of origin, the Starrett name is your assurance of unmatched precision and quality. After more than 125 years, Starrett remains "The World's Greatest Toolmakers" – the continuing standard of excellence.

METROLOGY SOLUTIONS

Starrett®
GLOBAL

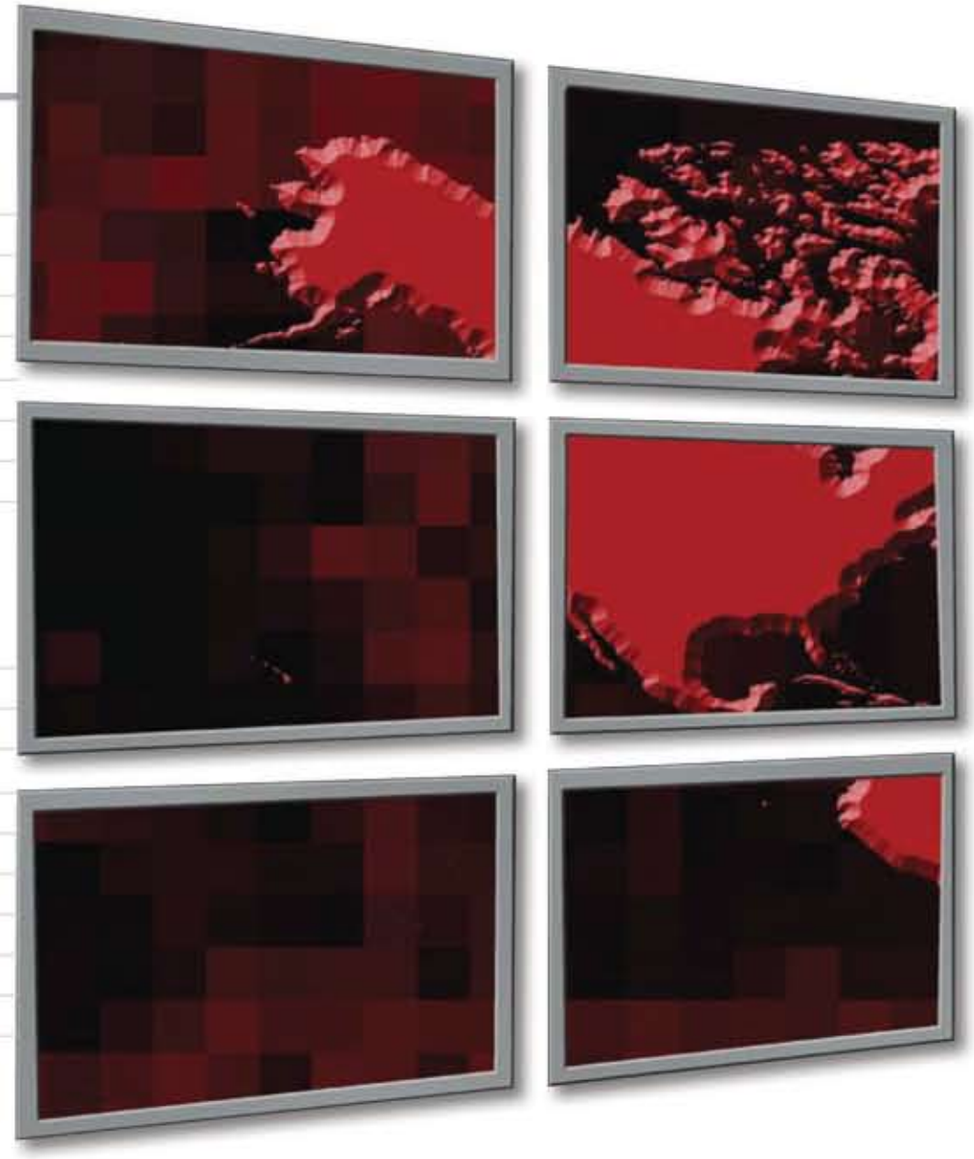
Contents

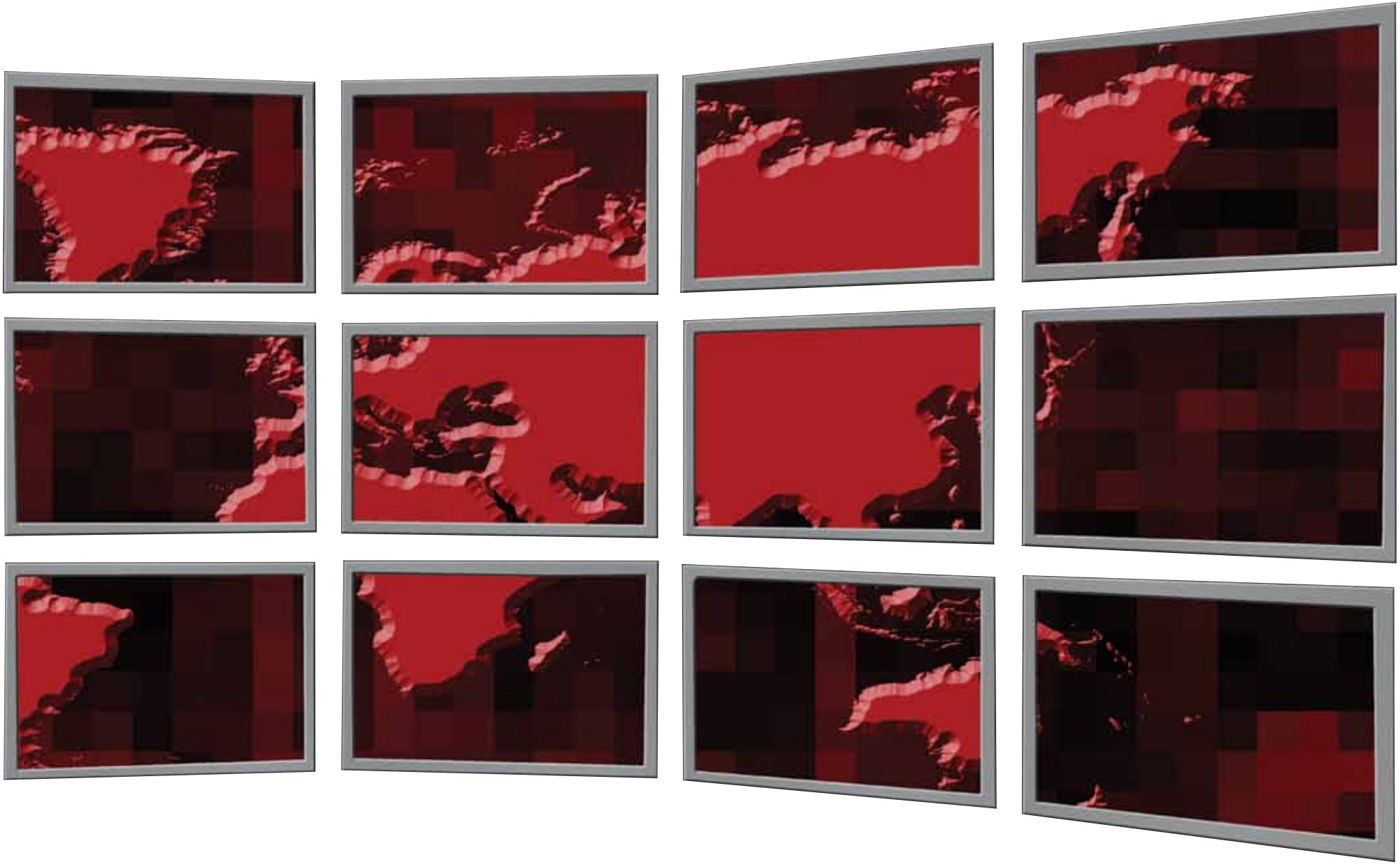
Manufacturing Facilities

Athol Massachusetts, USA
Cleveland, Ohio, USA
Laguna Hills, California, USA
Itu, São Paulo, Brazil
Jedburgh, Scotland
Mount Airy, North Carolina, USA
Santo Domingo, Dominican Republic
Suzhou, China
Waite Park, Minnesota, USA

Distribution & Offices

Auckland, New Zealand
Buenos Aires, Argentina
Mumbai, India
Saltillo, Mexico
Schmitten, Germany
Shanghai, China
Sidney, Australia
Singapore
Tokyo, Japan
Toronto, Canada





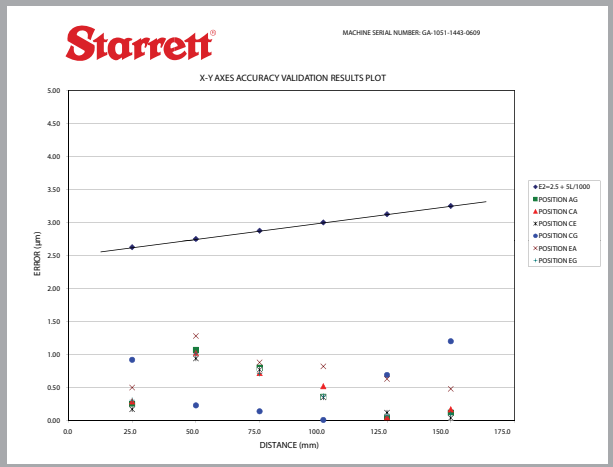
Metrology Services

Total Solution Provider

With Starrett Metrology products, the system is only a part of the whole package. From application analysis, system specification, installation, and training to post-installation field services, the excellence of our products is matched by the quality and comprehensive range of our services.

We recognize that reliable operation and dependable accuracy are essential to your quality and manufacturing operations. As part of our commitment to quality, we have established first generation NIST traceable documentation for all calibration artifacts and standards for all Vision Systems, and UKAS traceable documentation for all calibration artifacts and standards for all Optical Projectors. Our metrology professionals are available to assist you with whatever you need to keep your system on the job.

Our factory trained experts are available to perform calibration, preventive maintenance, repairs, upgrades and system retrofits. We offer in-house training, custom programming and measurement process development. Our field technicians are trained on both Optical Projector and Vision Systems to assure that the same calibration and validation methods utilised in the factory are used in the field.



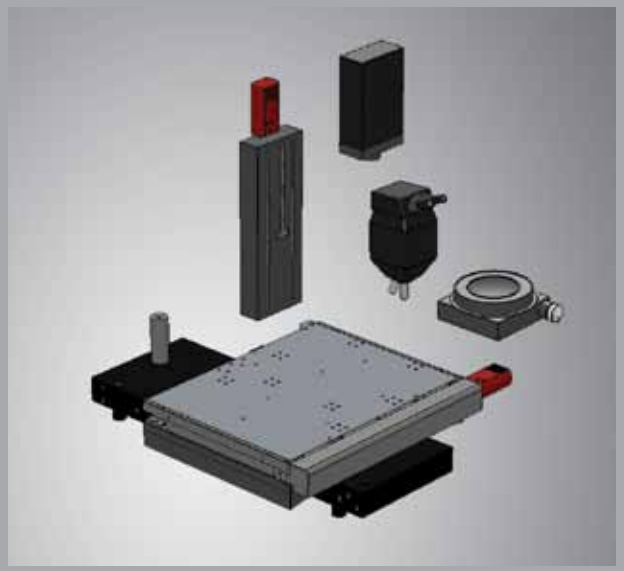
Custom Solutions

Starrett stands out from other precision tool providers through our willingness to work directly with customers to design and manufacture custom tools for applications where standard products cannot perform.

For metrology products, system specification almost always involves customisation. We approach each application with a wide range of excellent products, accessories and expertise. If necessary, we will take the additional step of developing original, customized solutions. Whatever it takes, we will work with you to configure a system that is just right for your requirements.

As a company, Starrett has provided solutions to industries including energy, aerospace, automotive, food packaging, high-technology, plastics, medical components, and to NASA and other government agencies over a period of many years.

Through design, testing, product specification and system development, we will find a solution to meet your requirements to your full satisfaction.



- FROM PROBLEM
- TO INNOVATION
- TO SOLUTION

At the conclusion of the process, a difficult problem is transformed into an innovative, often elegant solution.

CUSTOM SOLUTIONS

Training Services

Expert knowledge of software and metrology readout systems is essential to get the most from your measurement and inspection system. We offer training on our industry-standard Quadra-Chek® software and metrology readouts. Classes can be held at your facility, in our training room or online. Our expert instructors have extensive experience with these products as well as in the measurement sciences. They will show you how to get the best return on your investment.

QC5000 Basic

Intensive two day workshop for new, relatively inexperienced users or for someone looking for a refresher course. Topics include:

- Setup of the user interface for efficient measurement
- Explanation of icons and toolbars
- Setting up multiple workspaces for different departments/users
- Understanding the importance of setting up a datum reference frame
- Explanation and use of “video edge detection tools” and image capture
- Introduction to part programming
- Introduction to templates, reports and outputting

QC5000 Advanced

Two day course for those who have a basic understanding of QC5000 and want to learn more about measurement and parts programming. In-depth, advanced training, covering:

- Understanding of the user interface
- Calibrating the “field of view”
- Video tools including “pattern recognition”, video overlays and video scanning (worm probe)
- Templates, runs database, and advanced reporting tools usage
- Profile measurement
- Programming – using variables, conditional statements, loops, CAD programming and more
- Troubleshooting routines – what to do if things go wrong

QC200

One day workshop covering all aspects of the QC200, including:

- Understanding the QC200 interface
- Basic measurements and constructions
- Setting up a skew and establishing a datum
- Explanation of “points, lines and circles,” the makeup of 2D measuring
- Printing or outputting data to a computer
- Programming parts, including using “Measure Guide”

QC300

One day course to get the most from the QC300 display and metrology readout. Topics include:

- Understanding the QC300 interface
- Basic measurements and constructions
- Setting up a datum reference frame
- Understanding video tools and screen capture
- Exporting to a PC and/or USB thumb drive
- Part programming

We also offer custom training. Let us work with your engineering/metrology personnel to meet your specific needs and establish solutions for your challenging measurement applications. Starrett Metrology wants to become your one stop metrology headquarters, for new machine sales and to support your current metrology equipment.

For more information on our training services call 00 44 (0)1835 863501, e mail training@starrett-precision.co.uk or contact your local Starrett representative.

VISION

With the unbeatable combination of precision mechanics, powerful and intuitive software, and support from the most respected name in measurement, Starrett Metrology Systems take video-based and multi-sensor measuring systems to the next level.

Our Large Format Premier Series multi-sensor metrology systems are ideal for use in QC labs, research, engineering and manufacturing environments where large scale high precision measurement is critical.

The Galileo Standard Series AV200, AV300, AV350, MV200, and MV300 are small to intermediate travel, mostly bench-top measurement and inspection instruments for video-only “2.5D” measurement applications. Two sizes are available in either manual or motorized configurations while the larger AV350 is motorized only.

The Galileo Plus Series AV230+, AV300+, and AV350+ are multi-sensor instruments combining larger capacity with CNC and the capability to measure 2D or 3D geometry with QC5300 Metrology Software.

Starrett Vision Systems combine high-resolution images with robust, precision mechanical platforms to deliver superb accuracy and repeatable measurement results for a wide range of metrology applications. Systems are available with a choice of Quadra-Chek software or metrology readout.

Starrett Metrology Systems provide quick Return-On-Investment through increased product quality, user time savings and alternative equipment reduction. Whether you are looking to solve a specific application or for a general purpose measurement tool, consider a system from Starrett!

Large Format Premier Vision Line

Exceptional Speed & Accuracy

LF Vision

The Large Format Premier Measurement Systems range from 305mm (12”) to 1273mm (50") of X-Y travel and have 200mm (8”) of Z travel. This multi-sensor metrology instrument has increased accuracy to verify critical dimensions. They are ideal for use in QC labs, research, engineering or manufacturing environments.

Features

- Transports are driven by hi-speed (up to 750mm (30”) per second), zero maintenance, balanced linear motors which are close-looped to precision hi-resolution scales in all three axes
- Adjustable ergonomic workstation, including a compact control panel and standard keyboard, maximises operator performance
- Massive granite base, bridge and air-bearing ways for superior machine stability and precision
- Large Flat panel LCD video display
- Metronics QC5300 metrology software standard
- Available with optional Renishaw contact probe and laser scanner, these systems can be configured to meet a variety of measurement needs
- Also available with optional touch probe spotter camera for viewing critical placement of touch probe points as well as a touch probe changing rack

Model		LF313	LF463	LF713	LF963	LF1273
X-Y Travel		305mm x 305mm (12” x 12”)	460mm x 305mm (18” x 12”)	711mm x 610mm (28” x 24”)	965mm x 760mm (38” x 30”)	1270mm x 915mm (50" x 36")
Z Travel		200mm (8”)	200mm (8”)	200mm (8”)	200mm (8”)	200mm (8”)
Dimensions (W x D x H)		87 x 102 x 173cm (34” x 40” x 68”)	102 x 102 x 173cm (40” x 40” x 68”)	127 x 163 x 173cm (50" x 64" x 68")	176 x 204 x 180cm (69” x 80” x 71”)	217 x 235 x 180cm (85” x 93” x 71”)
Weight	gross	885kg (1950lb)	1043kg (2300lb)	1630kg (3600lb)	2087kg (4600lb)	2994kg (6600lb)
	net	590kg (1300lb)	726kg (1500lb)	1225kg (2700lb)	1588kg (3500lb)	2450kg (5400lb)
Accuracy		(X-Y) E2=1.5+5L/1000; (Z) E1=1.5+5L/1000				
Encoder Resolution		4µin (0.1µm)				
Video Camera		Color 1/2" CCD				
Optics		Navitar® 12:1 ratio zoom: (1.0X lens standard)				
Utilities Environment		67°-69°F (20° ±0.5°C) temperature range. 0.5°F (0.25°C)/hr maximum rate of change. 30%-80% RH non-condensing				
Utilities		115/230 VAC, 50/60 Hz, single phase, 1.0 kw. 85 L/m (3 CFM) dry air at 100-120 PSI (7 to 8.25 bar)				


Starrett

Galileo® Standard Series

AV200 AV300 AV350 MV200 MV300

Galileo® AV300

The Galileo AV300 combines high-resolution images with the latest software and a precision mechanical platform to deliver 300mm x 150mm x 140mm (12” x 6” x 5.5”) of superb accuracy for a wide range of measuring applications. Galileo systems are easy to use, versatile, and accurate. With a variety of options, you can configure a Galileo system that’s just right for your application and budget.

Galileo® AV200

The Galileo AV200 is a compact bench top “2.5D” video measurement system that runs on either PC based QC5200 or the powerful QC300 metrology display and control unit.

The AV200 provides 200mm x 100mm x 150mm (8” x 4” x 6”) of X-Y-Z measurement range with Video Edge Detection and complete CNC control. Constructed on a precision granite base, the AV200 provides great value in a small, easy-to-use package.

Note: The Galileo AV350 (shown on page 14 with plus package) is also available in a standard configuration.

Galileo® MV

Galileo MV systems are general-purpose manual video-based measurement systems, ideal for quality assurance and inspection labs, and manufacturing, assembly and research facilities.

A precision mechanical bearing X-Y-Z stage and column translates data accurately and repeatably to a dedicated geometric readout or QC5200 software. Available in two sizes, these compact bench top systems are simple, precise and powerful!

Above: Galileo MV200 with QC300
Right: Galileo MV300

Galileo® Plus Series Multi-Sensor

AV300+ AV350+ AV230+ AV230micro

Galileo® AV300+

The new AV300+ is an enhanced version of the popular Galileo AV300 CNC video-based measurement system. The new AV300+ system improves measuring performance by utilising a precision granite base along with an extended travel Z column, delivering 300mm x 150mm x 200mm (12” x 6” x 8”) X-Y-Z measuring range. The system is a servo driven motion platform for enhanced performance and includes a 12:1 zoom lens, hi-resolution digital colour camera and your choice of fibre optic or LED Illumination. Complete with vibration isolation and integrated machine stand, the 300 + delivers more capability for multi-sensor requirements. The AV300 + is powered by QC5300 software to handle a variety of measuring applications.

Galileo® AV350+

The Galileo AV350+ offers similar attributes and performance to the AV300+ with an expanded measurement envelope of 350mm x 350mm x 200mm (14” x 14” x 8”) X-Y-Z measuring range for those larger part and payload measurement requirements.

Galileo® AV230+

The Starrett Galileo AV230+ is a motorized higher accuracy, special purpose, video-based measurement system. Built on a precision granite base with a robust granite Z column structure.

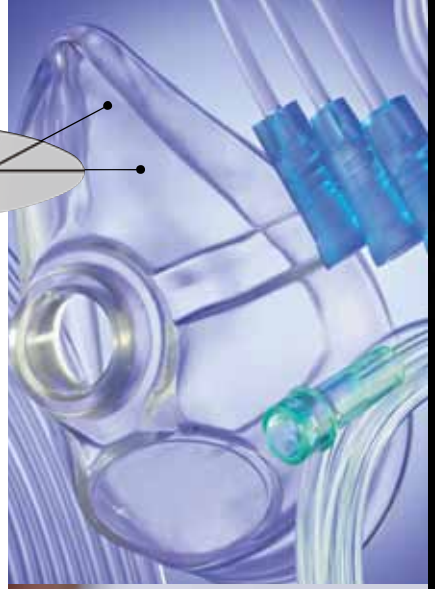
The system has 225mm x 150mm x 175mm (9” x 6” x 7”) X-Y-Z measuring range and is perfect for those applications requiring the strength and precision of the granite base and column combination.

The AV230+ is ideal for many custom requirements where typical “off-the-shelf” products are not acceptable. Let us help you by designing a system to meet your exacting requirements!

Galileo® AV230micro

The AV230micro is equipped with high-magnification microscope optics in place of a video camera. The rigid, precision granite superstructure of the AV230micro allows for applications that require high magnification levels and specialised microscopy illumination.

Galileo
Vision Systems



VISION PRODUCTS

KineMic™

Video Microscope Systems

KineMic™

The KineMic is a modular video-based inspection system that is ideal for quality assurance, receiving inspection, training, manufacturing, assembly, research and documentation.

The base system includes a microscope stand with coarse-fine focus control and a zoom lens with 6.5:1 magnification range, LED surface illumination, hi-resolution colour video camera and 17" LCD monitor.

Options include a choice of X-Y measuring stage with digital LCD display micrometers, imaging capability, boom stand and area of interest (AOI) laser pointer.

Right
KineMic with base and TM50 stage

Far Right
KineMic with boom stand

Specifications

- Video magnification with standard magnification range: 34X to 215X
- Field of View: 9mm to 1.42mm (.360” to .056”)
- Monitor Resolution: 1280 x 1024 pixels
- Color Camera: 8.5mm (1/3") with 768H x 494V resolution

Features

- Lighting: LED ring light
- Coarse-fine focus control
- One-year warranty. (Extended warranty available)
- Custom configurations available. Let us build a system that suits your requirements!

KineScope and VLink Software

The KineScope is a digital video camera, with precision optics and LED lighting in a microscope that fits in the palm of your hand. The KineScope has 40-140X magnification, which lets you zoom in on the fine details of electronics, product parts, or anything else too small to see.

Place the KineScope over the object and view the image on your computer screen instead of looking into a small eyepiece. Capture images or video and easily add labels, make measurements, and draw on the live image. The KineScope connects to your computer's USB port and includes VLink imaging software.

Features

- View live and captured images on a computer screen (or use a computer projector for large groups)
- 40-140X magnification
- Completely portable with your laptop computer
- Save still images, movies and time lapse
- Apply labels, markers, time stamps and measurement
- Draw directly on the live image
- Includes VLink imaging software

Specifications

- Image Sensor: ¼" CMOS
- Pixel Resolution: 640 x 480
- Power Req. USB Port, 2.0 or greater
- Minimum Operating System Requirements: Windows 2000, XP or Vista with DirectX 8.1 and Pentium III 500MHz
- Illumination: Super-Bright LED
- Field of View:
  - At 40X = 7.5 x 10mm
  - At 140X = 1.8 x 2.5mm
- Resolution: 4 microns

Motion Stages & Video Probe

TM X-Y Stages

TM series X-Y stages are designed for use in a variety of applications such as measurement, microscopy, inspection, and automation. TM stages adapt to existing microscopes from Nikon and Mitutoyo and are available in manual and motorised configurations. Custom sizes and configurations are also available.

Specifications

- Measurement Area (X-Y):

TM200: 200mm x100mm (8" x 4")

TM50: 50mm x 50mm (2" x 2")

- Accuracy: E1=3.5+5L/1000 (with computer enhancement)
- Resolution:

TM200: 0.5µm (20µin)

TM50: 100µin

- X-Y Squareness: Within 2.5µm/25mm (100µin/1")
- Top Tooling Plate Overall Size:

TM200: 350mm x 200mm (14" x 8")

TM50: 150mm x 150mm (6" x 6")

- Repeatability: within 2.5mm

Features

- Manual Drives are hand wheels with leadscrews on the TM200 or 50mm (2") micrometer heads on the TM50
- Precision machined from heat treated, billet aluminum, with dark gray anodized finish
- Open frame (with removable stage glass) standard
- Precision cross-roller bearings
- Top plate has 4mm threaded holes for custom tooling

Top to Bottom:
TM50 50mm x 50mm (2"x2") stage

TM200 100mm x 200mm (4x8") stage

TM50 50mm x 50mm (2x2") stage with digital micrometers

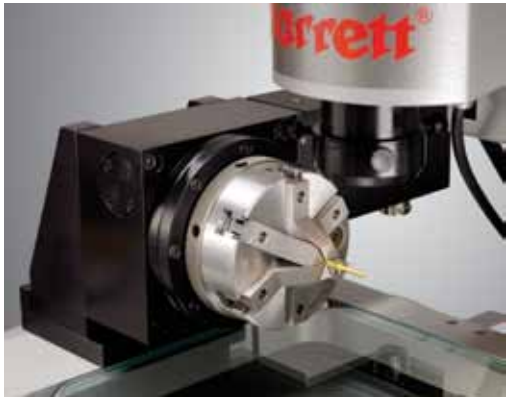
CP7K custom solution with X-Y-Z platform

Rotary Stages

The 100mm and 150mm Rotary Stages from Starrett Kinemetric come complete with stepper motor, bidirectional limits, tooling plate, enclosure and connectors. Each stage is certified to meet or exceed application standards.

Features

- Weight: 100mm, 2kg (4lb); 150mm, 6kg (13.5lb)
- Pre-loaded Worm and Gear Assembly
- Maximum Output Speed: 30 rpm
- Main Spindle Run-out, TIR: .005mm (.0002")
- Tooling Plate Run-out, (flatness) TIR: .01mm (.0004")
- Positioning Accuracy: 0.09˚ peak to peak, 0.05˚ goal
- Limit Switches: 2 normally closed switches provide ±160˚ of rotation (170˚ of Rotation on 150mm Rotary Stage)
- Motion control: Compatible with common controllers



Rotary Table

MultiProbe™ 100 & 200

MP100 & 200 Series MultiProbes offer a new, exciting addition to CMM probing technology. The MP100 will transform any CMM into a contact/non-contact measurement and inspection system in just minutes. Its unique compact design contains a motorised optical zoom lens, LED illumination and an adaptor to accept a Renishaw PH6 touch probe head. Optimal on a manual system, it is also very effective on a CNC system.

The MP200 combines your CMM with the powerful Quadra-Chek QC5300 software to deliver full CNC programmability functionality to your CNC Coordinate Measuring Machine. Features include Video Edge Detection, light & magnification control and multiple sensor (video and touch probe) measurement control. The MP200 can be provided either with or without QC300 and the related components necessary to transform your CMM into a more productive measuring device. Starrett field service engineers can fully install on existing CMM's to maximise the use of your Coordinate Measuring Machine and technical resources.

Features & Specifications

- Motorised Zoom: 6.5:1
- Video Camera: hi-resolution colour camera
- Controls: Wired remote motorised zoom control
- Lighting: LED ring light with dimmer control
- Monitor: 15" flat panel LCD on MP100
- Contact/non-contact measurement with one set-up
- Renishaw touch probe compatible
- Digital crosshair generator on MP100
- CMM mounting spindle included
- Adapts to most Coordinate Measuring Machines

Example of a typical mounting on a CMM

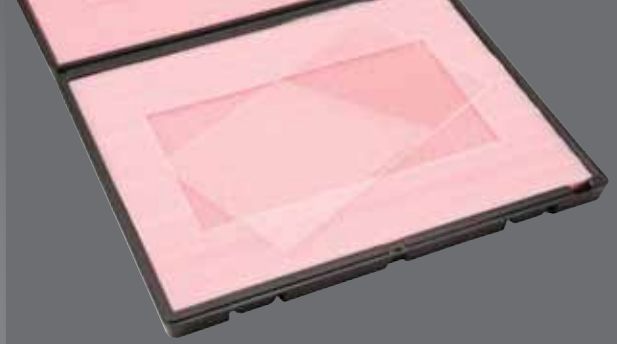
Specifications & Options

MODEL	MV200	MV300	AV200	AV300	AV350	AV230+	AV300+	AV350+	LF PREMIER
Bench-Top System	X	X	X	X					
Floor-Standing System					X	X	X	X	X
X-Y-Z Measuring Range (mm)	200 x 100 x 150	300 x 150 x 125*	200 x 100 x 150	300 x 150 x 125*	350 x 350 x 200*	230 x 150 x 175	300 x 150 x 200*	350 x 350 x 200*	305 x 305 x 200 460 x 305 x 200 710 x 610 x 200 965 x 760 x 200 1270 x 915 x 200
X-Y-Z Measuring Range (inch)	8" x 4" x 6"	12" x 6" x 5.5"*	8" x 4" x 6"	12" x 6" x 5.5"*	14" x 14" x 8"*	9" x 6" x 7	12" x 6" x 8"*	14" x 14" x 8"*	12" x 12" x 8" 18" x 12" x 8" 28" x 24" x 8" 38" x 30" x 8" 50" x 36" x 8"
X-Y Accuracy (in µm)	E1=3.5+5L/1000	E1=3.5+5L/1000	E2=1.9+L/1000	E2=1.9+5L/1000	E2=2.5+5L/1000	E2=1.5+5L/1000	E2=1.9+5L/1000	E2=2.5+5L/1000	E2=1.5+5L/1000
Z Accuracy (in µm)	E1=2.5+5L/1000	E1=2.5+5L/1000	E1=2.5+5L/1000	E1=2.5+5L/1000	E1=2.5+5L/1000	E1=2.0+5L/1000	E1=2.5+5L/1000	E1=2.5+5L/1000	E2=1.5+5L/1000
Multi-Sensor Compatible						X	X	X	X
Control System/Software (see pgs. 22-23)	QC200, QC300 QC5200	QC200, QC300 QC5200	QC300 QC5200	QC300 QC5200	QC300 QC5200	QC5300	QC5300	QC5300	QC5300
Zoom Optics	6.5:1	6.5:1	6.5:1	12.0:1	12.0:1	12.0:1	12.0:1	12.0:1	12.0:1
S-Video Color Camera	X	X	X	X	X				
Digital Video Color Camera			with QC5200	with QC5200	with QC5200	X	X	X	X
Surface Ring Illumination	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED
Transmitted Illumination	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED or Fi-O	LED
Coaxial Illumination	O	O	O	O	O	X	X	X	X
Dark Field Quadrant Illumination (LED only)	O	O	O	O	O	O	O	O	O
Auxiliary Lenses (Optional)	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X	.5X, 2.0X
Microscope Optics					O	O		O	O
Rotary Table Compatible				O	O	O	O	O	
Renishaw Touch Probe				O	O	O	O	O	O
Optimet Laser						O	O	O	O
Workstation	O	O	O	O	O	X	X	X	X
Part Fixturing	O	O	O	O	O	O	O	O	O
Video Pixel Calibration Standard	O	O	O	O	O	X	X	X	X
Calibration Standards	O	O	O	O	O	O	O	O	O

* Includes additional 200mm dovetail slide for increased Z working distance.

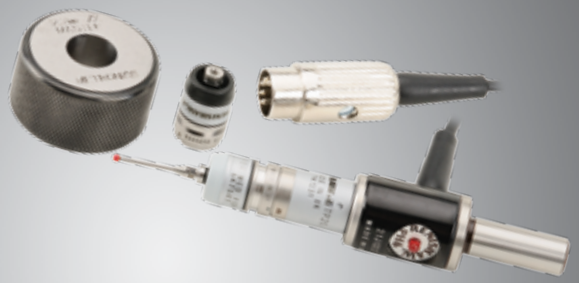
X = Standard Feature, O = Option

Fibre Optic Ring Light



Glass Calibration Standard

Fibre Optic Illumination Sources



Renishaw Touch Probe Kit

Galileo Workstation

MV Workstation

Quadra-Chek®

Digital Read Outs and Software

Modern metrology is a complex sequence of measuring, recording, analyzing and reporting dimensional data. The conceptual model underlying the Quadra-Chek digital readout design organizes the workflow to support operators at every stage of the measurement process

QC200

The QC200 metrology DRO requires a video monitor display and crosshair generator in vision configuration.

A time-saving measurement tool with patented Measure Magic® technology. Ideal for measuring 2D features on Optical Profile Projectors and Manual Vision Machines.

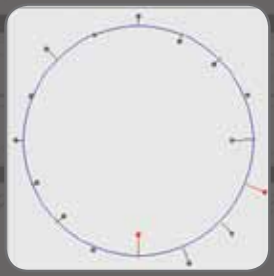
- Inch/metric conversion, toggle between incremental/absolute and simple zero reset
- Skew function for ease of part alignment
- Integrated geometric tolerancing allowing for pass/fail measurements
- Simple part programming with measure guide
- USB and RS232 Interface
- Linear and segmented linear error correction
- Intuitive displays
- Crisp, clear, bright black and white LCD display
- Optional optical edge for Profile Projectors

QC200

QC300

The QC300 features an enhanced colour touch-screen interface with patented Measure Magic® technology. It is ideal for the measurement of 2D features on Optical Profile Projectors and video systems. All QC300 Series models include parallel, serial and USB port.

- 210mm (8.4") LCD colour touch screen
- All the measurement features of the QC200
- Video edge detection
- Single and multi-point video tools
- Image archiving allows for capture of the live video image and markup
- Color coded geometric tolerancing
- Optional CNC/Light Control
- RS232 output to a PC
- Output to USB thumb drive
- Optional automatic zoom control on CNC Systems
- Optional optical edge detection.



Data Cloud from QC300

X	-0.3631
Y	-0.1480
D	1.0018
F	0.0053
PTS	16
Fit:	best fit

QC300

QC5200

The QC5200 metrology software is a Windows-based PC inspection system for video based measuring machines. The system supports both Windows XP and Windows Vista.

The QC5200 supports a wide range of industries that require precise measurement and inspection of 2D parts using a single sensor. This product features an intuitive user interface and simple, meaningful visual displays. The design reflects a deep understanding of the user's needs along with a process model that supports the operator at every stage in the measurement process.

- Powerful yet intuitive video edge detection tools
- Auto-Focus
- "XY" 2D measurements with optional "Z" axis for height measurements
- Image capture with drag and drop data reporting
- Image processing tools
- Continuous edge mode
- Patented measure magic
- Alternative algorithms
- Auto program from CAD files
- Pattern recognition
- Integrated runs database
- Geometric tolerancing
- Advanced calculation
- Data cloud analysis

Color Key		QC-5200 series								QC-5300 series	
2D Measurement	3D Measurement	5200	5205	5210	5215	5230	5235	5240	5245	5300	5310
CONFIGURATIONS											
2D Measurement		■	■	■	■	■	■	■	■	■	■
3D Measurement										■	■
X-axis		■	■	■	■	■	■	■	■	■	■
Y-axis		■	■	■	■	■	■	■	■	■	■
Z-axis						■	■	■	■	■	■
Q-axis (Electronic Protractor)				■	■			■	■		■
Optical edge detection (optional)			■		■		■		■		
OPTIONS											
Motion control system		■	■	■	■	■	■	■	■	■	■
Video edge detection (colour or b/w)		■		■		■		■		■	■
Programmable light control		■		■		■		■		■	■
Auto-focus (z-axis only)						■		■		■	■
Programmable zoom						■		■		■	■
Non-linear error correction		■	■	■	■	■	■	■	■	■	■

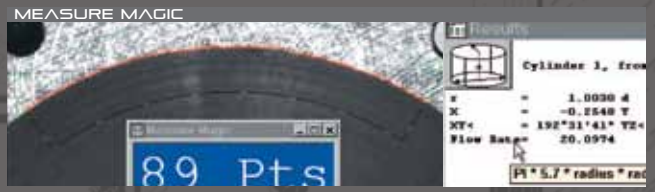
QC5200

QC5300

The QC5300 metrology software picks up where the QC5200 leaves off. This product offers multi-axis dimensional measurement of 2D and 3D parts. The QC5300 integrates an innovative user interface, state of the art ergonomics, powerful data import, export and data analysis tools.

- 3D measurement set
- 3D offset alignments
- Customisable screen layouts
- Multiple reference frames
- 3D part view
- Renishaw touch probe interface
- Optional laser sensor
- Vector probing
- Multiple language support
- 3D Measure Magic
- Advanced calculations
- 3D data clouds
- Alternate algorithms
- Drag and drop report generator
- Data export to a wide variety of applications

MEASURE MAGIC

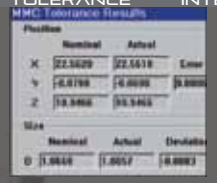


DATA CLOUD

ALTERNATE FITS

IMAGE VIEW

TOLERANCE



INTEGRATED DATABASE

QC5300

OPTICAL
PROJECTORS

Optical Profile Projectors provide a time tested, cost effective, solution for non-contact measurement. They are found in lab and shop environments, often near product manufacturing activity. Optical Profile Projectors are used for an exceptionally wide range of dimensional inspection applications. In recent years, Starrett's enhanced mechanical designs have combined with an advancement in microprocessor capability to make our current products even more accurate, repeatable, efficient and easy to use.

At the heart of these systems are precision optics, superb lighting and a highly accurate workstage. They combine to ensure bright, sharp images and exceptional accuracy.

Generally, horizontal models work well with parts that need to be fixtured, held in a vice, or on centres. Vertical models provide comparable accuracy and are ideal for parts that are placed on the glass insert of the workstage.

Vertical systems work well when the parts to be measured are flexible or soft (i.e., plastic, thin stampings or electrical components).

The versatile Starrett line includes optical systems from 400-1000mm (16"-40") screen diameters, horizontal and vertical models and a wide range of special machines.

We offer many choices of optical magnification, manual, motor-driven or CNC workstage travel, with PC or LCD metrology readouts.

HE400

HB400, HD400

VB400, VF600

HF600, HS600

HF750, HS750, HS1000

Options & Accessories

HE400

HE400

Updated from our original HE350, this machine offers a 400mm (16”) screen, 250mm (10”) x-axis table travel, bayonet fitting lenses and Q-axis angular readout; all to improve capacity and performance. These latest horizontal projectors are fitted with industry-leading Quadra-Chek digital readout systems as standard, making them simple to use, but having the power to satisfy the most complex measuring requirements.

FEATURES AND SPECIFICATIONS

- Fully usable 400mm (16”) screen diameter
- All metal construction
- Large measuring travel: 254mm X-axis, 100mm Y-Axis (10” x 4”)
- Digital protractor for accurate angle measurements: 1' resolution
- Lamphouse mounted helix adjustment for accurate thread form inspection
- Available with the full range of Quadra-Chek readout systems
- Fine adjustment on all axes, plus zero backlash, fast traverse mechanism on the X-axis
- Fully retractable duplex fibre optic surface illumination
- Optional automatic edge detection




HB400 HD400

Horizontal Benchtop

HB400 HD400

HB400

A robust, compact horizontal axis bench top projector, the leader in its class and the one all others are compared against.
The HB400 provides a vertically correct image on a fully usable 400mm (16”) diameter screen. With a significantly larger measuring capacity, this projector provides a measurement range previously only possible on floor-standing units.

HD400

The HD400 includes these additional standard features:

- Dual lens slide providing an ultra-quick lens change
- One third more X-axis travel than HB400

Features and Specifications

- Fully usable 400mm (16”) screen diameter
- Exceptionally stable, all metal construction for optimum performance and accuracy
- Large measuring travel: 300mm X-axis, 150mm Y-Axis (12” x 6”) for HB400 and 405mm X-axis, 150mm Y-Axis (16” x 6”) for HD400
- High precision workstage with 525 x 125mm (21.25" x 5") top plate, with two machine slots for easy fixturing
- Stage weight capacity: 45kg (100 lbs)
- Dual mirror design for vertically correct image
- Available with the full range of Quadra-Chek readout systems
- Digital protractor for accurate angle measurements, 1' resolution
- ±15° Workstage helix adjustment for accurate thread form inspection
- Fine adjustment on all axes, plus zero backlash, fast traverse mechanism on the X-axis
- Fully retractable fibre optic surface illumination with heavy-duty shielding
- Automatic edge detection option
- Motorised and CNC workstage options
- Dual lens mount with slide action for quick magnification changes on HD400




VB400 VF600

VERTICAL
VB400 VF600

VB400

With a large measuring capacity, the VB400 has the versatility to be at home in many different working environments. It is ideal for high volume or low batch production, routine component sampling, or general purpose tool room use. In fact, the VB400 can be found wherever there is the need to verify and measure complex shapes and hole patterns, and where accuracy, ease of use and speed are essential.

Designed with unique surface illumination options, the VB400 can be configured to match exact measuring requirements.

Features and Specifications

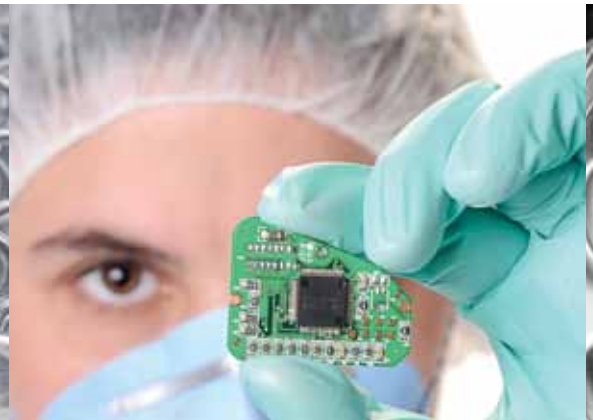
- Fully usable 400mm (16”) screen diameter
- Exceptionally stable, all metal, design and construction for optimum performance and accuracy
- Large measuring travel: 200mm X-axis, 100mm Y-Axis (8” x 4”)
- High precision workstage with 400mm x 225mm (16" x 9") top plate, with machine slot for easy fixturing
- Stage weight capacity: 10kg (22lb)

VF600

If your measuring requirements determine the use of a large screen vertical axis projector, then look no further than the Starrett VF600. A design based on 35 years of knowledge in the manufacture of high performing optical projectors, the VF600 is ideal for the larger components found in the electronics, pressings and extrusion industries.

With its helix facility, single or multiple lens turret, choice of workstages and large range of digital readout options, the VF600 is the ultimate in vertical axis profile projectors.

- Available with the full range of Quadra-Chek readout systems
- Unique surface illumination, standard fibre optic or optional dual lamp system
- Digital protractor for accurate angle measurements, 1' resolution
- Fine adjustment on all axes, plus zero backlash, fast traverse mechanism on the X and Y axis
- Fully retractable fibre optic surface illumination with heavy duty shielding
- Automatic edge detection option

HF600 / HS600 HF750 / HS750 / HS1000

Horizontal Floor Standing / Floor Standing Side bed

HF600 HF750 HS600 HS750 HS1000

HF600 / HF750

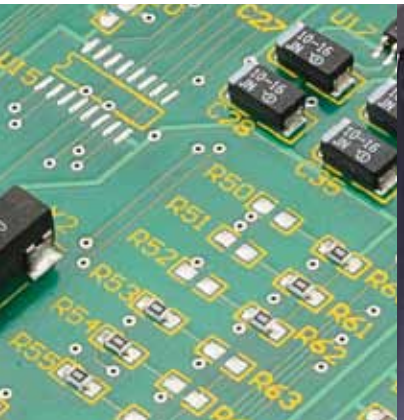
Starrett's floor model optical projectors are well known throughout the world for superior value and exceptional measuring performance across the full measuring range and at all magnifications. The HF600 sets the standard in all applications from the QC lab to the production floor. The same exemplary build standards as the HF600, the HF750 super capacity optical projector delivers benefits from an even larger 762mm (30") screen. This large, fully usable screen sets a new standard for clarity and brightness.

HS600 / HS750 / HS1000

Unrivalled performance and versatility go hand in hand with the HS600, HS750 and HS1000 heavy duty side bed projectors. Large, bright and clear screens are set to one side to facilitate close, comfortable and unrestricted access to the screen and workstage areas.

Features and Specification

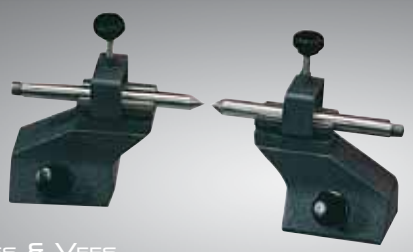
- Fully usable screen diameters from 600mm (24") to 1000mm (30")
- Floor model design for optimum large workpiece performance and accuracy
- Large measuring travel: 300mm X-axis, 200mm Y-Axis (12"x 8")
- High precision workstage with 625 x 225mm (25" x 9") top plate, with 2 machine slots for easy fixturing
- Stage weight capacity: 150kg (330lb)
- Dual mirror design for vertically correct image
- 2-lens condenser, turret mounted
- Available with the full range of Quadra-Chek readout systems
- Digital protractor for accurate angle measurements, 1' resolution
- ±15° Sub workstage helix adjustment for accurate thread form inspection
- Standard with 3-lens indexable turret (4 lens on the HF600)
- Power workstage on vertical and horizontal axis
- Fully retractable fibre optic surface illumination with heavy duty shielding
- Canopy and curtains included standard
- Automatic edge detection option
- CNC workstage options



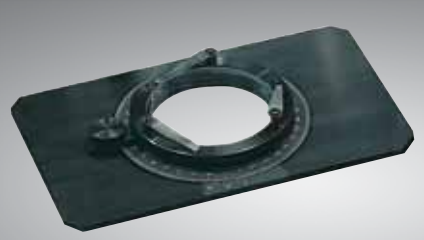

Options & accessories

MODEL	HE400	HB400	HD400	VB400	VF600	HF600	HF750	HS600	HS750	HS1000
Horizontal Projector	X	X	X			X	X	X	X	X
Vertical Projector				X	X					
Bench-Top Projector	X	X	X	X						
Floor-Standing Projector					X	X	X	X	X	X
Side-mounted Projection Screen								X	X	X
400mm / 16" Diameter Screen	X	X	X	X						
600mm / 24" Diameter Screen					X	X		X		
750mm / 30" Diameter Screen							X		X	
1000mm / 40” Diameter Screen										X
200mm / 8" X Axis Travel				X	X					
250mm / 10" X Axis Travel	X			O	O					
300mm / 12" X Axis Travel		X				X	X	X	X	X
400mm / 16" X Axis Travel		O	X							
500mm / 20” X Axis Travel						O	O	O	O	O
100mm / 4" Y Axis Travel	X			X	X					
150mm / 6" Y Axis Travel		X	X	O	O					
200mm / 8" Y Axis Travel						X	X	X	X	X
50mm / 2" Focus Travel		X	X							
75mm / 3" Focus Travel						X	X	X	X	X
100mm / 4" Focus Travel				X						
Single Lens Mount with quick action lens change	X	X		X	X					
Dual Lens Mount with quick action lens change			X							
Lens Turret with three lens capacity					O		O	X	X	
Lens Turret with four lens capacity						O		X	O	X
Dual Rotary Lens Condenser System for hi/low mag lenses					X	X	X	X	X	X
Collimating condenser with yellow/green filter and provision to mount further accessories.	X	X	X							
5X Magnification Lens		O			O	O	O	O	O	
10X Magnification Lens	O	O	O	O	O	O	O	O	O	O
20X Magnification Lens	O	O	O	O	O	O	O	O	O	O
25X Magnification Lens	O	O	O	O	O	O	O	O	O	O

OV² Ring Light



Centres & Vees



Rotary Workstage

Glass plate holder

MODEL	HE400	HB400	HD400	VB400	VF600	HF600	HF750	HS600	HS750	HS1000
31.25X Magnification Lens	O	O	O	O	O	O	O	O	O	O
50X Magnification Lens	O	O	O	O	O	O	O	O	O	O
100X Magnification Lens	O	O	O	O	O	O	O	O	O	O
Linear Encoder (glass scale) on both X and Y axes	X	X	X	X	X	X	X	X	X	X
Q-Axis Digital Protractor for angular measurements	X	X	X	X	X	X	X	X	X	X
Optical Edge Detection (with QC200E or QC300E series)	O	O	O	O	O	O	O	O	O	O
Video Edge Detection (with QC300 series)	O	O	O	O		O	O	O	O	O
Twin Fibre Optic Surface Illumination	X	X	X	O	X	X	X	X	X	X
Heavy-Duty Work Stage						O	O	O	O	O
Optional Fully-Automatic CNC control		O	O		O	O	O	O	O	O
Internal Auto Edge Sensing		O	O		O	O	O	O	O	O
OV² Video Camera capable of 240X video magnification. (Versions for LCD colour monitor, QC300 or QC5000 series)	O	O	O	O		O	O	O	O	O
Colour Monitor option for OV² Video Camera System with 15" LCD Monitor, cross-hair generator and mounting arm.	O	O	O	O		O	O	O	O	O
Adapter for OV² Video Camera System	O	O	O	O		O	O	O	O	O
OV² Ring Light with manual control	O	O	O	O		O	O	O	O	O
OV² Ring Light for QC300 DROs	O	O	O	O		O	O	O	O	O
Precision Glass Graticule	O	O	O	O	O	O	O	O	O	O
Iris Diaphragm (High Power Condenser)	O	O	O		O	O	O	O	O	O
Precision Rotary Vice	O	O	O			O	O	O	O	O
Vee Block on Rotary Base	O	O	O			O	O	O	O	O
Precision Rotary Work Stage with 360 degree graduated scale and vernier segment				O	O					
Precision Fixed Vice, 1-1/4" Capacity	O	O	O			O	O	O	O	O
Helix Centre Support Fixture				O	O					
Precision Centre and Vee's	O	O	O	O	O	O	O	O	O	O
Glass Plate Work Holder	O	O	O			O	O	O	O	O
Cabinet Stand (Width x Height x Depth) 50cm x 75cm x 80cm / 20” x 30” x 32”	O	O	O	O						
Motorised X-Y Axis		O	O		O	X	X	X	X	X
Canopy and Curtains	O	O	O	O	X	X	X	X	X	X
Anti Glare Screen Visor		O	O							

X = Standard Feature, O = Option

Starrett®

For over 125 years, manufacturers, builders and craftsmen worldwide have depended upon The L.S. Starrett Company's products to ensure the consistent quality of their work.

They know that the Starrett name on a saw blade, hand tool or measuring tool ensures unprecedented quality, innovative products, exceptional service and expert technical assistance.

With strict quality control, state-of-the-art equipment and an ongoing commitment to producing superior tools, the thousands of products in today's Starrett line continue to be the most accurate, robust and durable tools available.

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