

# Fowler®

HIGH PRECISION



Highly Engineered Systems  
2022 Catalog



Celebrating 75 years... and still growing.

*A message from Fowler High Precision CEO David Francis.*

Today's airplanes are safer than they have ever been before. Modern cars last tens of thousands more miles than previous generations. New factory equipment can assemble quality products for generations. One of the key reasons for these improvements is the quality of the parts that go into them. And for 75 years, Fowler has been helping make the world's parts better.

Fowler High Precision is a family-owned business. We are recognized globally as one of the world's leading suppliers of high-quality inspection, control, and calibration equipment. Since 1946, we have dedicated ourselves to providing the most innovative and precise measurement products available on Earth. Our company's longstanding affiliations with other industry leaders, such as Baty, Bowers, Fusion, Sylvac, Trimos, Wyler and zCat have helped us remain at the forefront of industry's ever-changing demands.

At Fowler High Precision, our mission is to make measurement easy. We continue to introduce innovations in inspection and measurement with new systems designed to increase accuracy, decrease measurement time, and automate record keeping. We offer solutions for all your measurement challenges.

High precision measurements demand an intricate network of expertise. Our technical field-sales team, our repair and service technicians, our engineering staff and our inside technical advisers work hand in hand with you. We are committed to making sure that your team has the highest level of product support and training. Both our East Coast and West Coast metrology labs are A2LA ISO/IEC 17025 accredited so if your equipment ever needs calibration and repair, you can have 100% confidence that your product will perform like new.

It has been my family's privilege to support this industry with quality metrology products for the last 75 years. You have my personal commitment that Fowler will continue to invest in the technologies and the people to support your measurement needs well into the future.

Thank you,



**David Francis**  
CEO



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# ***Calibration & Service***

We offer full service for Bowers, Sylvac, Trimos, Baty, FUSION, zCAT and more. Our factory trained service and technical team can keep you up and running with as little down time as possible.

Our state of the art A2LA Accredited ISO/IEC 17025 calibration laboratory offers full calibration and certification for a wide variety of precision tools including gage blocks, ring gages, vision and scan systems, height gages and much more!

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## ***How does this benefit you as a customer?***

- Minimizes risk by choosing a technically competent lab that has a proven quality system in place
- Reduces expensive retesting by assuring thorough evaluations by an independent, competent calibration lab that has been assessed by a third party
- Reduces cost and improves acceptance of your goods around the world through a system of International agreements (ILAC). Accredited laboratories receive a form of international recognition, which allows their data to be more readily accepted world wide
- A2LA accreditation provides confidence in the measurement results



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***To learn more about Fowler calibration, to schedule an on-site calibration, systems training, and service please contact our Technical Support team at 1-800-788-2353.***





# SCAN SYSTEMS

*Optical Measuring Machines For Turned Parts*

**SCAN S25T**

NEW Tabletop Model, 21" x 18" footprint!



The Fowler Sylvac SCAN S25T is the latest addition to optical measuring systems from Sylvac.

Using the latest Fowler Sylvac SCAN technology, this high resolution, high accuracy machine is ideal for rapid measurement of small cylindrical parts up to 26mm diameter and 200mm in length. The SCAN S25T is perfect for items such as, watch parts, dental implants, bone-screws, automotive, aerospace components and general cylindrical parts where inspection time and accuracy matters.

ONE CLICK  
MEASUREMENT



Main user interface



New easy to use touch screen operator interface

Small yet powerful, the Fowler Sylvac SCAN S25T comes equipped with Sylvac's renowned tilt axis, for comprehensive thread measurement, capable of measuring threads with helix angles up to 30°.

Delivered automation ready, with a motorized tailstock for automated clamping, quick release tooling, external I/O connectivity and communication protocols.

Easy to use, with an all new operator touch screen interface panel, offering intuitive operation directly on the shop floor, with one click automatic measurement and part recognition.

**Exclusive helix tilting system for more comprehensive thread measurements**



**Technical Specifications**

	Diameter	Length
Measuring range	1.02"/26mm	7.87"/200mm
Resolution	0.000001"/0.0001mm	0.000001"/0.0001mm
Accuracy	(0.9 + D[mm]/100) μm	(2.5 + D[mm]/200) μm
Repeatability	0.000020"/0.0005mm	0.000031"/0.0008mm
Holding capacity	2"/51mm	7.87"/200mm
Tilt axis	30°	
Headstock	High precision rotary	
Tailstock	Motorized	
Max. part weight	6.6 lbs / 3 kg	
Machine weight	132 lbs / 60 kg	
Machine dimensions	Width: 17.7"/450mm, Height: 23.2"/590mm, Depth: 20.5"/520mm	

Part Number	Description
54-902-025-5	SCAN S25T



## SCAN F60 Series Optical Measuring Center

The Fowler Sylvac SCAN F60 Series, developed to measure even the most demanding of cylindrical parts. All new camera and optics, based on years of experience in this field, offering superior image processing, speed, quality and accuracy.

New attractive design for use on the shop floor, accuracy comes standard with a new enclosure, complete with a door and safety light curtain, integrated calibration master, temperature sensors for environmental control and large LED status light.

Easy to use with the renowned "Reflex-Click" technology, offering part recognition, auto-measure and cycle start, all at the push of a button. New ergonomically designed work-holding, with quick release tooling for rapid part change overs. New modern software layout, offering new features including, dust filters, graphical statistics view, dynamic results for quick, easy analysis, and more .....

### Features:

- Diamond coated center and a rotation center included
- Complete 2D part scan in less than 3 seconds
- Reduce inspection time
- Increase productivity
- Quick return of investment, typically less than 6 months

*For a list of accessories or to schedule a demo please contact the technical department  
1-800-788-2353*



54-902-406-5



54-902-406-7

### Technical Specifications

Model	SCAN F60		SCAN F60T		SCAN F60L		SCAN F60LT	
Part Number	54-902-406-0		54-902-406-5		54-902-406-2		54-902-406-7	
	Diameter	Length	Diameter	Length	Diameter	Length	Diameter	Length
<b>Measuring range</b>	2.5"/64mm	11.8"/300mm	2.5"/64mm	11.8"/300mm	2.5"/64mm	19.6"/500mm	2.5"/64mm	19.6"/500mm
<b>Resolution</b>	0.000001"/0.0001mm							
<b>Accuracy MPE</b>	<b>Diameter:</b> 1 + D/100 μm <b>Length:</b> 3 + L/200 μm							
<b>Repeatability</b>	<b>Diameter:</b> 0.00002"/0.5 μm <b>Length:</b> 0.00007"/ 1.8 μm							
<b>Maximum Part Weight</b>	22 lb. / 10 kg.							
<b>Part Rotation</b>					Yes			
<b>Tilting for Thread Measurement</b>	—		30°		—		30°	
<b>Advance Programming</b>	Yes							



Part Number	Description
54-902-406-0	SCAN F60
54-902-406-5	SCAN F60T
54-902-406-2	SCAN F60L
54-902-406-7	SCAN F60LT

## SCAN S145 and S145L

The Fowler Sylvac SCAN S145 and S145L are suitable for larger parts up to 5.7"/145mm diameter and 50.3"/1280mm length. They come equipped with the advanced Reflex-Scan+ software and are automation ready.

### Features:

- Part measurement up to 5.7"/145mm diameter and up to 50.3"/1280mm length
- Fast, accurate, repeatable, reliable measurements of cylindrical parts
- Full part measurement in just a few seconds
- Easy to use software for operator use on the shop floor
- One click measurement, part recognition, auto measure
- Advanced and custom software features for complex parts
- Offline software and programming from CAD
- Full measurement reports and SPC compatible
- Automation ready
- Motorized tailstock
- Reduce inspection time, reduced scrap and save money!

### Includes:

- 2 Adapters for Morse 2 , rotating center 42mm 54-902-638-0 and drive center 54-902-621-0
- Computer with screen, keyboard and mouse
- Windows multilingual operating system
- Sylvac Reflex SCAN+ software
- Manual



54-902-145-0



54-902-145-5

### Technical Specifications

Model	SCAN S145		SCAN S145L	
Part Number	54-902-145-0		54-902-145-5	
	Diameter	Length	Diameter	Length
<b>Measuring range</b>	5.7"/145mm	24.2"/615mm	5.7"/145mm	50.3"/1280mm
<b>Resolution</b>	0.000001"/0.0001mm			
<b>Accuracy</b>	Diameter: (1.5 + D/100 μm) / Length: (4 + L/200)			
<b>Repeatability</b>	Diameter: 0.5 / Length: 1.0 μm			
<b>Holding Capacity</b>	10"/254mm	24.2"/615mm	10"/254mm	50.3"/1280mm
<b>Rotary Headstock</b>	Yes		Yes	
<b>Maximum Part Weight</b>	220 lbs / 100 kg			
<b>Machine Weight</b>	1166 lbs / 530 kg		1430 lbs / 650 kg.	

Part Number	Description
54-902-145-0	SCAN S145
54-902-145-5	SCAN S145L





## All SCAN Applications

Our range of Fowler Sylvac SCAN machines are designed to measure round parts with diameters from 0.2mm up to 14mm and up to 1200mm long. Most cylindrical parts, such as aerospace and automotive shafts and components, connectors, dental screws and implants, hydraulics parts, rollers, turbines parts, CNC turned parts, can be measured in a few seconds. All thread types and features can be measured and completely analyzed with our machines.



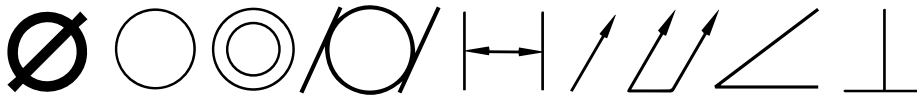
### Medical



### Injection Molding

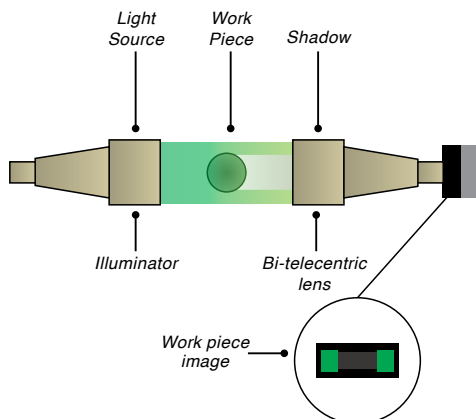


*Diameter, circularity, concentricity, cylindricity, parallelism, runout circular, runout total, angularity, perpendicularity and much more!*



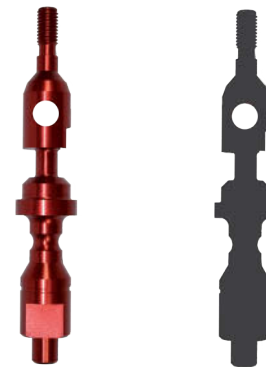
## Measuring Principle

All Fowler Sylvac SCAN machines incorporate high resolution line-scan cameras, which would correspond to a 200 megapixel camera! Using the green LED illuminator to project a collimated beam of light across the part, the part is scanned at speeds up to 100mm/s, while the contour of the part is collected through the high precision bi-telecentric lens system and the projected image is detected and processed using the latest line-scan camera technology.

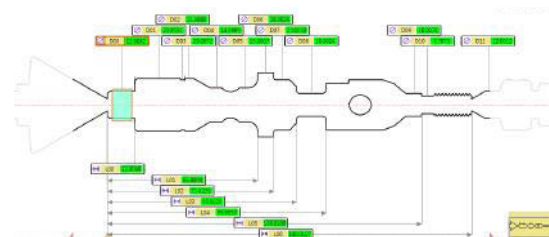


Workpiece

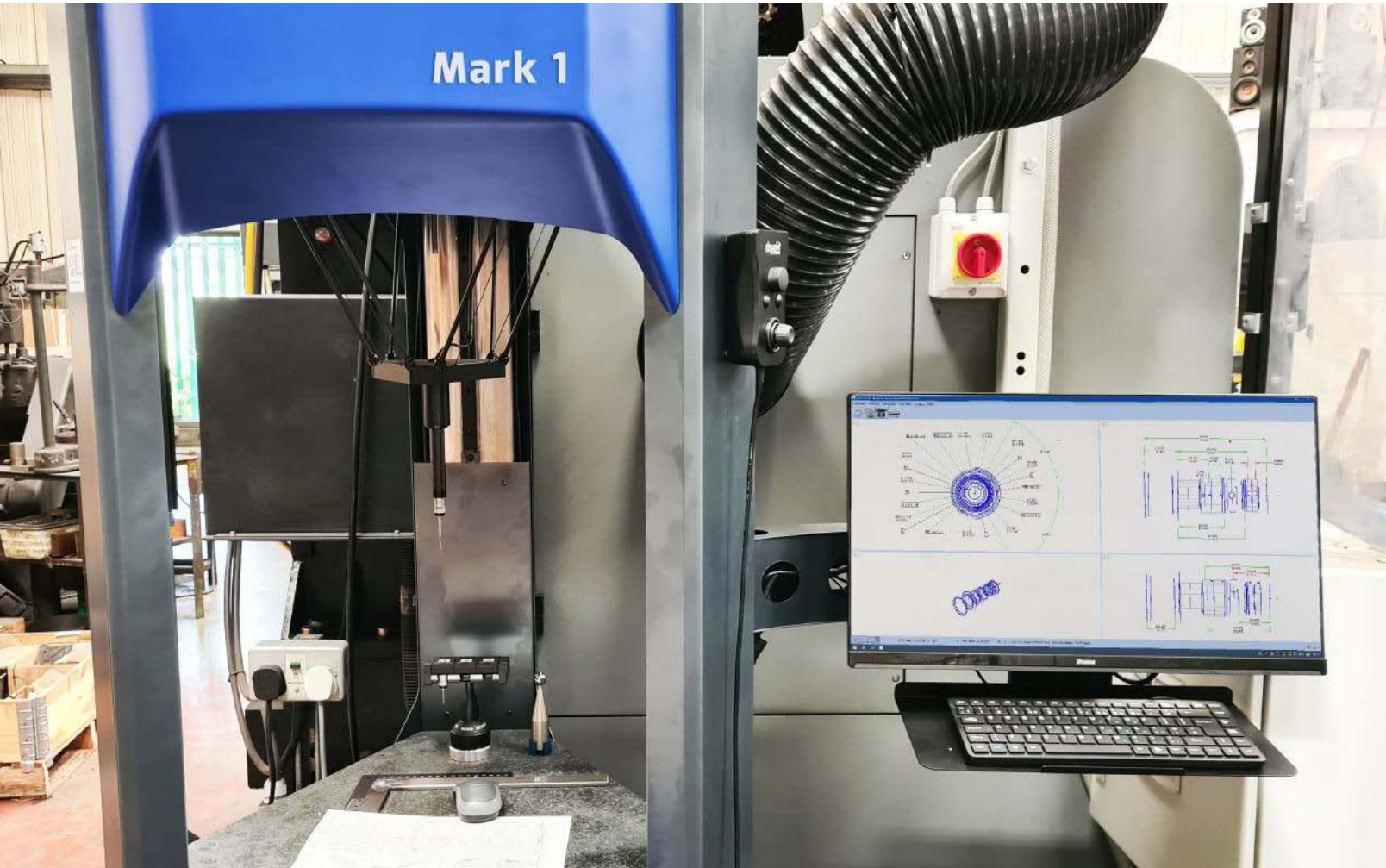
Shadow Image



The contour of the workpiece is reproduced in the software and all the various elements shown can be measured statically (without part rotation) or dynamically (with part rotation) when geometrical features such as run-out or concentricity must be measured.







# CMM SYSTEMS

*For Easy Geometrical Measuring Of Complicated Parts*

## Mark 1 - Shop Floor CMM

The next generation of shop-hardened non-cartesian CMM

True to Fowler's heritage for innovation, the Mark 1 is the world's first CMM to utilize a delta mechanism.

Designed for robustness and reliability, the Mark 1 CMM will run around the clock keeping your production line running day and night, manufacturing 100% in spec parts, making it ideal whether it is positioned next to a machine tool, in a manufacturing cell, or used in a dedicated inspection area.

Five temperature sensors monitoring both the machine and ambient temperature ensure that the Mark 1 is capable of operating in uncontrolled environments and reporting measurements as accurate as if they had been taken at 20°C. The software will also warn you the temperature changes to quickly for repeatable results.

The Automatic Tool Offset Correction available with the FUSION software compliments the attributes of the Mark 1 perfectly allowing utilization as part of a fully automated production process in the midst of a manufacturing environment.

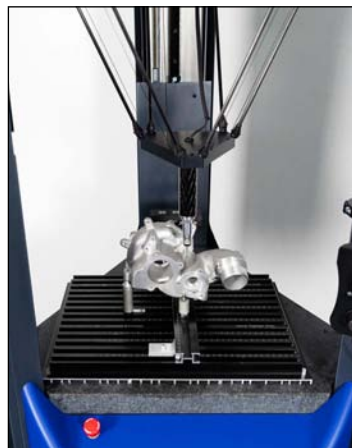
The ergonomics of the Mark 1 have rethought with the operator in mind. It is not only quick and easy to perform one-off inspections, but also has ample access for either batch inspection or to facilitate automatic loading. The Mark 1 has the largest measuring volume for the footprint of any CMM in a robotic cell.

Robust, accurate and reliable, the Mark 1 CMM is the perfect solution to automatically verify part quality for critical components.



### Features:

- Fully sealed recirculating bearings proven in the machine tool market significantly improve smoothness and long term accuracy
- A directly coupled belt-drive system eliminates the need for a gearbox and any associated backlash issues
- Swiss-made DC motors and a new Deva motion control system provide unparalleled reliability that is needed for shop floor CMM inspection
- The super-smooth belt-drives and linear bearings also enable long styli to be used without suffering false triggering due to vibration
- Automatic Tool Offset Correction and Automation options allow integration into fully automated manufacturing cells
- The Mark 1 can support the TP200B probe which uses strain gage technology, so it does not exhibit lobing characteristics making it ideal for high accuracy applications. In addition, the TP200 probe has a longer life expectancy compared to the TP20, also making it ideal for automated and high-volume applications.

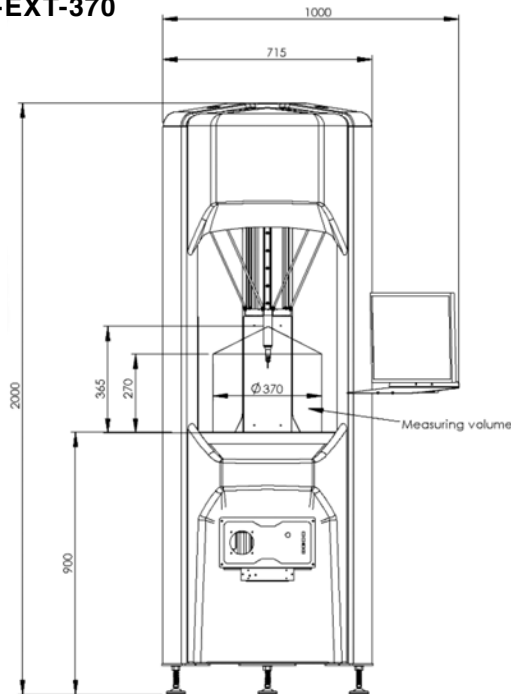




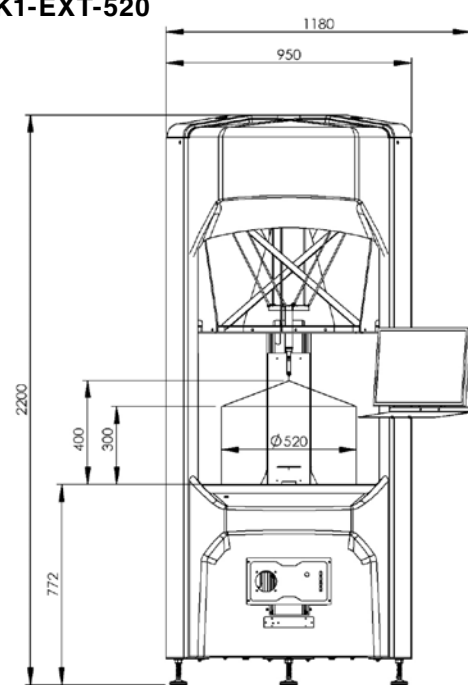
## Mark 1 - Shop Floor CMM

Technical Specifications			
Order Number		MK1-EXT-370	MK1-EXT-520
<b>Measuring Range</b>			
Cylindrical	XY (a)	Dia. 14.5"/370mm	Dia. 20.4"/520mm
Cylindrical	Z (b)	10.6"/270mm	11.8"/300mm
At Centre	Z (c)	14.3"/365mm	15.7"/400mm
<b>Dimensions</b>			
Overall Width	X (d)	28.1"/715mm	37.4"/950mm
Width Incl. Monitor	X (e)	39.3"/1000mm	46.4"/1180mm
Overall Depth	Y (f)	28.7"/730mm	38.9"/990mm
Depth Incl. Monitor	Y (g)	40.5"/1030mm	51.9"/1320mm
Overall Height	Z (h)	78.7"/2000mm	86.6"/2200mm
Height To Table	Z (i)	35.4"/900mm	30.4"/772mm
<b>Total Weight</b>		396 lbs./180 kg.	464.2 lbs./211 kg.
<b>Table</b>		Granite Plate	Granite Plate
<b>Table Load Capacity</b>		440 lbs./200 kg.	440 lbs./200 kg.
<b>Volumetric Accuracy</b>		(2.6 + 0.4L/100)µm	(2.6 + 0.4L/100)µm
<b>Scale Resolution</b>		0.00001"/0.0001mm	0.00001"/0.0001mm
<b>Operational Temp. Range</b>		45°C	45°C
<b>Max. Acceleration Vector</b>		750mm/sec <sup>2</sup>	750mm/sec <sup>2</sup>
<b>Max. Velocity Vector</b>		500mm/sec	500/sec
<b>Required Air Pressure</b>		Not required	Not required

MK1-EXT-370



MK1-EXT-520



Part Number	Description	Table
MK1-EXT-370	MARK 1 Shop Floor CMM - (XY) 370mm x (Z) 270mm	Solid Granite Plate
MK1-EXT-520	MARK 1 Shop Floor CMM - (XY) 520mm x (Z) 300mm	Solid Granite Plate



## Mark 2 - Manual / CNC CMM

The complete inspection system

Fast, accurate and reliable, the MARK 2 CMM comes in four different sizes with Y axis travel up to 1500mm. Available as either a manual machine or with full CNC control, the MARK 2 can be used with touch trigger probe, or continuous contact scanning probe.

The all aluminum bridge structure not only ensures that the Mark 2 has low inertia and hence high acceleration to get the job done quickly, but also that the temperature of the machine rapidly follows the temperature of the room, ideal when the CMM is not housed in a controlled environment. Temperature compensation in the software reports results as if they had been measured at 20°C/68°F.

The standard high-tech granite and aluminum table, originally developed for the laser optics industry, provides fantastic natural damping of high frequency vibration and the granite Y rail allows pre-loading of the bridge air bearings in both directions for superior accuracy.

Another unique feature of the MARK 2 is that manual machines can be easily upgraded to CNC in the future, which allows the machine to adapt as your needs grow.



CMM'S  
Geometrical Measurements

### Features:

- Shortest learning curve of any equivalent system
- Smallest overall footprint of any comparable size CMM
- Choice of Y axis sizes ranging from 600mm to 1500mm
- Suitable for the workshop environment
- Protection from environmental vibrations as standard
- Optimised friction free air bearings, aluminum bridge and granite table

### Machine Options:

- Auto Temperature Compensation
- Touch Screen Joystick
- CCD Camera System
- Collimated Back Light Option
- Dual Monitor
- Fixture Kit

### Common Probe Options:

- |                      |                         |
|----------------------|-------------------------|
| <b>Mark 2 Manual</b> | <b>Mark 2 CNC</b>       |
| • TP8                | • RTP20                 |
| • MH20i              | • PH10T (w/TP20, TP200) |
|                      | • PH10M (w/SP25)        |
|                      | • PH6 (w/SP25)          |

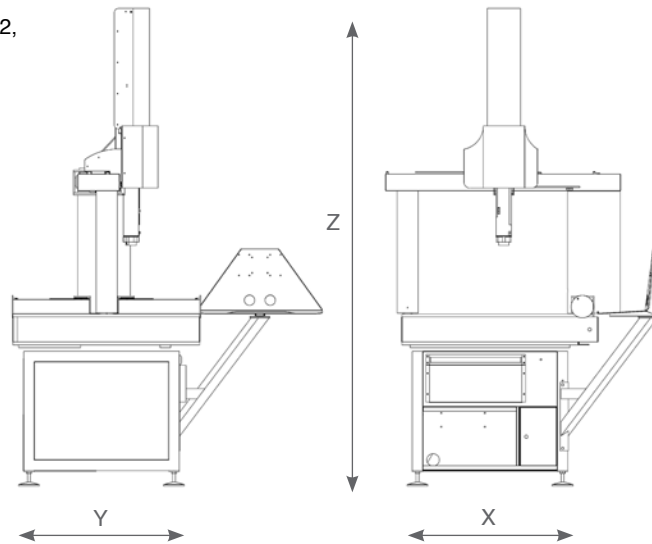


## Mark 2 - Manual / CNC CMM

Technical Specifications	
<b>Axis Travel</b>	X 25.2"/640mm Y 23.6"/600mm, 35.4"/900mm, 47.2"/1200mm, 59.2"/1500mm Z 19.6"/500mm
<b>Overall Size</b>	X 44.4"/1130mm Y 35.4"/900mm, 47.2"/1200mm, 59.2"/1500mm, 70.8"/1800mm Z 91.3"/2320mm
<b>*Volumetric Accuracy</b>	TP20 (2.4 + 0.4L/100) $\mu\text{m}$ TP200 (2.3 + 0.4L/100) $\mu\text{m}$ SP25M (2.1 + 0.4L/100) $\mu\text{m}$
<b>Scale Resolution</b>	0.00002"/0.0005mm
<b>**Optimum Temp Range</b>	18 - 22°C
<b>Operational Temp Range</b>	0 - 45°C
<b>Table</b>	Honeycomb aluminium & granite or solid granite
<b>Table Load Capacity</b>	600 lbs./300 kg. (Honeycomb) or 660 lbs./500 kg. (Solid)
<b>Max. Velocity Vector</b>	600mm/sec - CNC Units Only
<b>Max. Acceleration Vector</b>	600mm/sec <sup>2</sup> - CNC Units Only
<b>Air Consumption</b>	50 l/min (1.8 cfm)
<b>Required Air Pressure</b>	4 bar (60 psi)

\*Maximum Permissible Error  $MPE_E$  according to 10360-2, 2009 within the thermal limits defined for optimum temperature range.

\*\*Installation environment thermal limits:  
Rate of change  $<1^\circ\text{C}/\text{hr}$  and  $<2^\circ\text{C}/24\text{hr}$  | Temperature gradient  $<1^\circ\text{C}/\text{m}$



Part Number	Description	Table
Manual		
<b>MK2-6-M-HG-PCM</b>	MARK 2 Manual CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-9-M-HG-PCM</b>	MARK 2 Manual CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-6-M-SG-PCM</b>	MARK 2 Manual CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Solid Granite
<b>MK2-9-M-SG-PCM</b>	MARK 2 Manual CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Solid Granite
<b>MK2-12-M-SG-PCM</b>	MARK 2 Manual CMM - (X) 640mm x (Y) 1200mm x (Z) 500mm	Solid Granite
CNC		
<b>MK2-6-C-HG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-9-C-HG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-6-C-SG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Solid Granite
<b>MK2-9-C-SG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Solid Granite
<b>MK2-12-C-SG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 1200mm x (Z) 500mm	Solid Granite
<b>MK2-15-C-SG-PCM</b>	MARK 2 CNC CMM - (X) 640mm x (Y) 1500mm x (Z) 500mm	Solid Granite

## Mark 2HS - High Specification CMM

### Eliminate inspection bottlenecks

Since 2004 the MARK 2HS CMM has been providing the manufacturing industry with a fast and accurate solution for their measurement problems. The Mark 2HS is both faster and more accurate than the standard model, and all without compromising the fantastic value for money for which FUSION has become known.

The MARK 2HS also utilizes 0.1 $\mu$ m resolution scales on each axis. These scales are incorporated with state-of-the-art error mapping techniques to create a machine that is 20% faster and 15% more accurate than our standard machine.



#### Features:

- Fitted with 0.1 $\mu$ m linear encoders for superior accuracy
- Angled bearing zero backlash drive system for quicker acceleration and faster travel
- Shortest learning curve of any equivalent system
- Choice of Y axis sizes ranging from 600mm to 1500mm
- Suitable for the workshop environment
- Protection from environmental vibrations as standard
- Optimised friction free air bearings, aluminum bridge and granite table

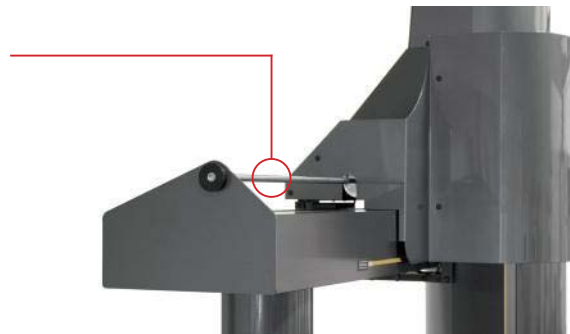
#### Machine Options:

- Auto Temperature Compensation
- Touch Screen Joystick
- CCD Camera System
- Collimated Back Light Option
- Dual Monitor
- Fixture Kit

#### Common Probe Options:

- RTP20
- PH10T (w/TP20, TP200)
- PH10M (w/SP25)
- PH6M (w/SP25)

Rather than using the belt drive system, the MARK 2HS incorporates drive rod technology developed on our larger machines and vision products. This allows even greater accelerations to be achieved meaning that the HS model measures 20% quicker for high production shops.



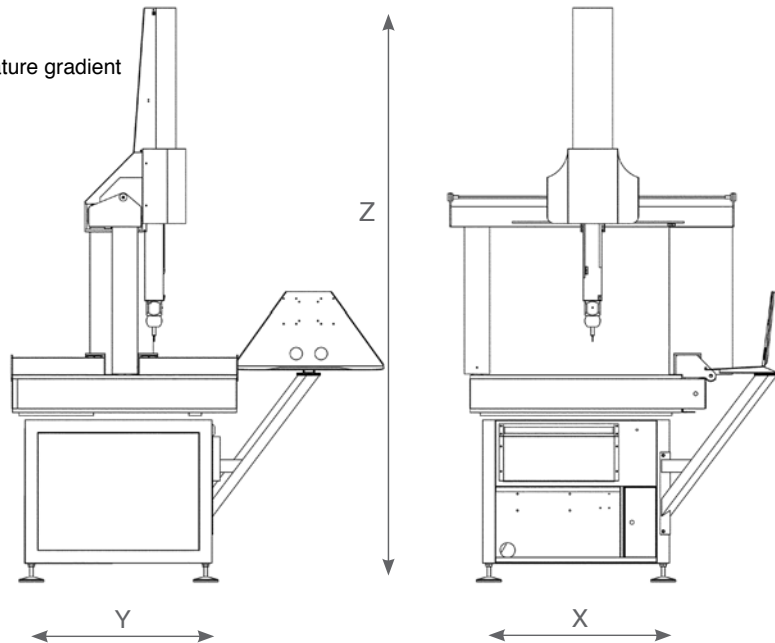


## Mark 2HS - High Specification CMM

Technical Specifications	
<b>Axis Travel</b>	X 25.2"/640mm Y 23.6"/600mm, 35.4"/900mm, 47.2"/1200mm, 59.2"/1500mm Z 19.6"/500mm
<b>Overall Size</b>	X 44.4"/1130mm Y 35.4"/900mm, 47.2"/1200mm, 59.2"/1500mm, 70.8"/1800mm Z 91.3"/2320mm
<b>*Volumetric Accuracy</b>	TP20 (2.1 + 0.4L/100) $\mu\text{m}$ TP200 (2.0 + 0.4L/100) $\mu\text{m}$ SP25M (1.8 + 0.4L/100) $\mu\text{m}$
<b>Scale Resolution</b>	0.0001"/0.0001mm
<b>**Optimum Temp Range</b>	18 - 22°C
<b>Operational Temp Range</b>	0 - 45°C
<b>Table</b>	Honeycomb aluminium & granite or solid granite
<b>Table Load Capacity</b>	660 lbs./300 kg. (Honeycomb) or 1100 lbs./500 kg. (Solid)
<b>Max. Velocity Vector</b>	866mm/sec
<b>Max. Acceleration Vector</b>	1200mm/sec <sup>2</sup>
<b>Air Consumption</b>	50 l/min (1.8 cfm)
<b>Required Air Pressure</b>	4 bar (60 psi)

\*Maximum Permissible Error  $MPE_E$  according to 10360-2, 2009 within the thermal limits defined for optimum temperature range.

\*\*Installation environment thermal limits:  
Rate of change  $<1^\circ\text{C/hr}$  and  $<2^\circ\text{C}/24\text{hr}$  | Temperature gradient  $<1^\circ\text{C/m}$



Part Number	Description	Table
<b>MK2-6-HS-HG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-9-HS-HG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Honeycomb Aluminum and Granite
<b>MK2-6-HS-SG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 600mm x (Z) 500mm	Solid Granite
<b>MK2-9-HS-SG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 900mm x (Z) 500mm	Solid Granite
<b>MK2-12-HS-SG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 1200mm x (Z) 500mm	Solid Granite
<b>MK2-15-HS-SG-PCM</b>	MARK 2HS CMM - (X) 640mm x (Y) 1500mm x (Z) 500mm	Solid Granite

## Mark 3 - Linear Drive CMM

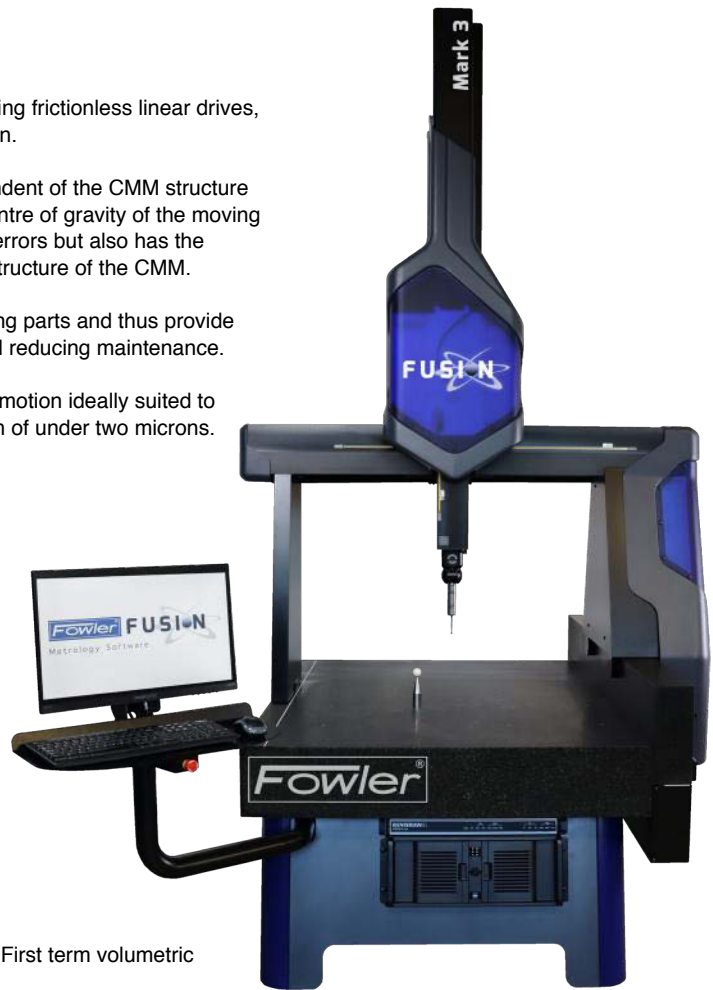
Starting the linear drive revolution

The Mark 3 breaks new ground in design and innovation using frictionless linear drives, which are the key to its fast and exceptionally smooth motion.

The kinematic isolated drive structure is completely independent of the CMM structure and ensures that the motor thrust is directed through the centre of gravity of the moving parts. This not only avoids acceleration induced metrology errors but also has the effect of thermally isolating the motors from the metrology structure of the CMM.

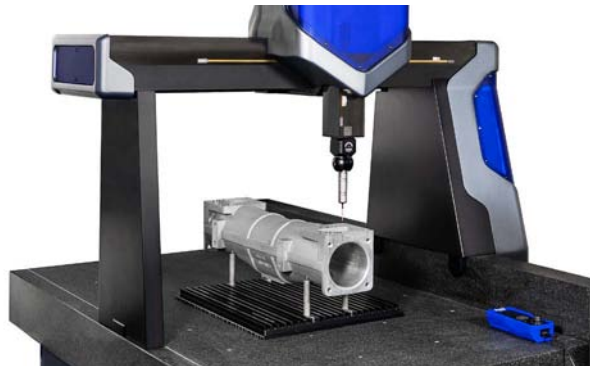
Linear motors are non-contact and therefore have no wearing parts and thus provide the perfect solution for CMM drives, improving reliability and reducing maintenance.

The Mark 3 is a standout machine with fast, smooth, silent motion ideally suited to contact scanning and with a first-term accuracy specification of under two microns.



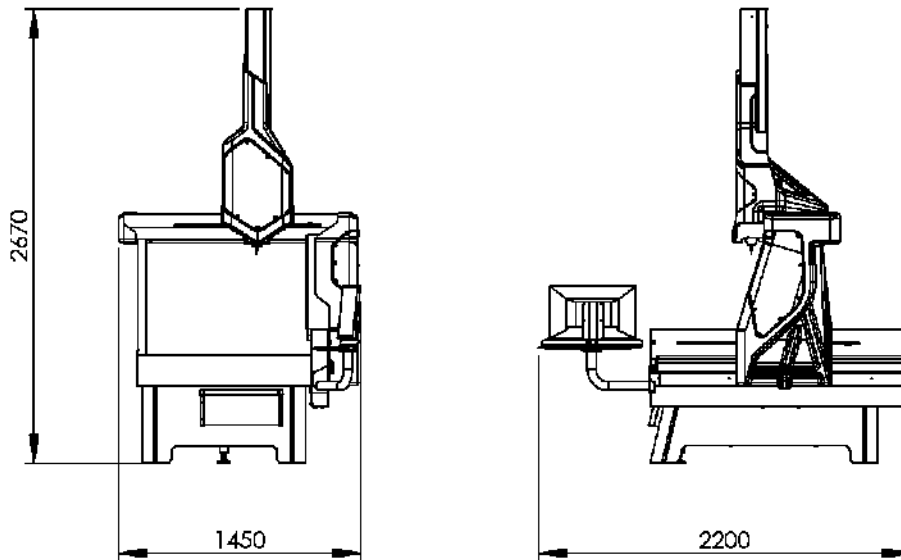
**Features:**

- The most accurate machine in the Fowler FUSION range. First term volumetric error specification under  $2\mu\text{m}$ .
- Linear motors offer frictionless, smooth, silent motion
- No wearing parts means greater reliability and reduced maintenance
- Drives applied through the centre of gravity improves both speed and accuracy
- Thermal isolation of motors from the metrology structure avoids thermally induced metrology errors
- Smooth motion allows fast and accurate contact scanning
- Automatic temperature compensation ensures that measurement results are reported as if they had been measured at  $20^{\circ}\text{C}$



## Mark 3 - Linear Drive CMM

Technical Specifications	
<b>Measuring Volume</b>	X 31.4"/800mm
	Y 39.3"/1000mm, 59.0"/1500mm, 78.7"/2000mm
	Z 23.6"/600mm
<b>Overall Size</b> (without monitor arm)	X 55.2"/1403mm
	Y 60.2"/1530mm, 79.9"/2030mm, 99.6"/2530mm
	Z 106.3"/2700mm
<b>Accuracy</b>	TP20 (1.9 + 0.4L/100) $\mu$ m
	TP200 (1.8 + 0.4L/100) $\mu$ m
	SP25M (1.75 + 0.4L/100) $\mu$ m
<b>Scale Resolution</b>	0.0001"/0.0001mm
<b>Table</b>	Solid granite
<b>Table Load Capacity</b>	2200 lbs./1000 kg.
<b>Max. Velocity Vector</b>	1020mm/sec
<b>Max. Acceleration Vector</b>	1020mm/sec <sup>2</sup>
<b>Air Consumption</b>	50 l/min (1.8 cfm)
<b>Required Air Pressure</b>	5 bar (72 psi)



Part Number	Description	Table
MK3-HO-10-SG-PCM	MARK 3 Linear Drive CMM - (X) 800mm x (Y) 1000mm x (Z) 600mm	Solid Granite
MK3-HO-15-SG-PCM	MARK 3 Linear Drive CMM - (X) 800mm x (Y) 1500mm x (Z) 600mm	Solid Granite
MK3-HO-20-SG-PCM	MARK 3 Linear Drive CMM - (X) 800mm x (Y) 2000mm x (Z) 600mm	Solid Granite

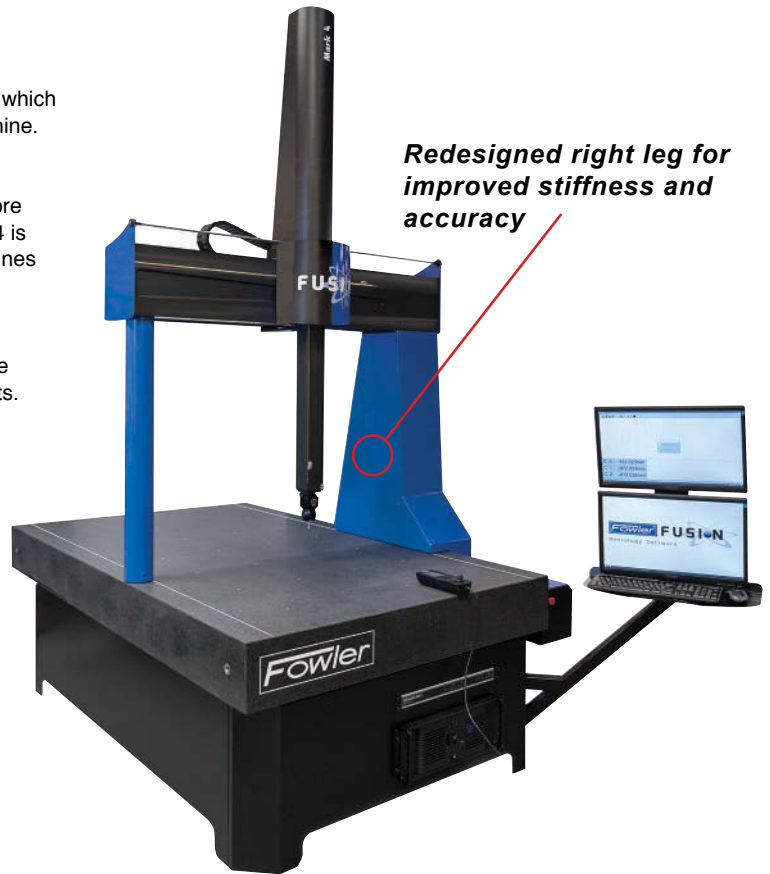
## Mark 4 - CMM

Large affordable precision

The MARK 4 CMM is the result of a design evolution of the award winning range of machines. Many of the design improvements revolve around the right leg of the machine, which has been modeled on the hugely successful MARK 5 machine.

All moving parts are light and this, combined with excellent design, means that the MARK 4 has low inertia and therefore optimal acceleration characteristics. The improved MARK 4 is fast, minimizing inspection times, to keep your production lines running.

The MARK 4 range is the best value-for-money for the measuring volume of any CMM available in the market - the perfect affordable metrology solution for big and heavy parts.



**Redesigned right leg for improved stiffness and accuracy**

### Features:

- Shortest learning curve of any equivalent system
- Smallest overall footprint of any comparable size CMM
- Choice of Y axis sizes ranging from 1000mm to 3000mm
- Suitable for the workshop environment
- Optimized friction free air bearings, aluminum bridge and granite table
- Supplied with the CMM touch screen joystick as standard

### Machine Options:

- 4400 kg. load capacity
- Auto temperature compensation
- CCD camera system
- Collimated back light option
- Dual monitor
- Fixture kit

### Common Probe Options:

- RTP20
- PH10T (w/TP20, TP200)
- PH10M (w/SP25)
- PH6M (w/SP25)

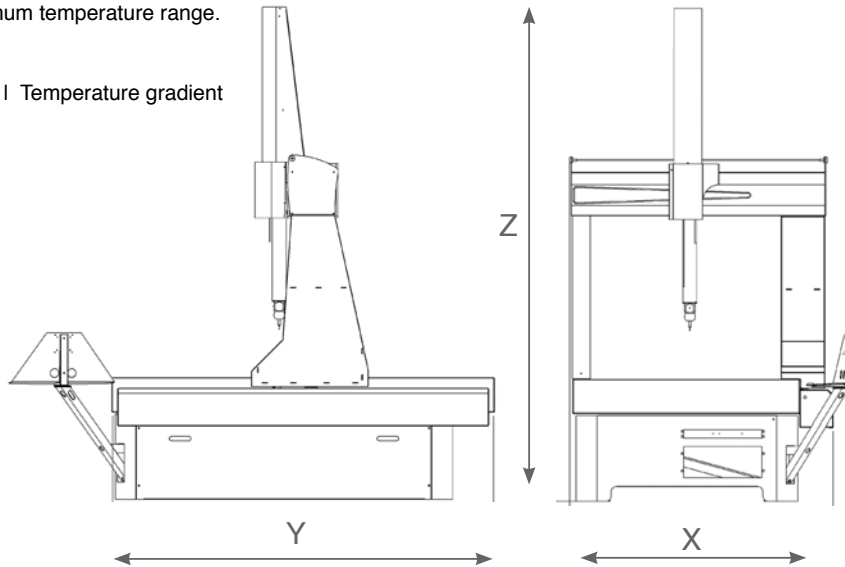


## Mark 4 - CMM

Technical Specifications		
<b>Axis Travel</b>	X	39.3"/1000mm
	Y	39.3"/1000mm, 59.0"/1500mm, 78.7"/2000mm, 98.4"/2500mm, 118.1"/3000mm
	Z	23.6"/600mm, 31.5"/800mm
<b>Overall Size</b>	X	59.8"/1520mm
	Y	66.9"/1700mm, 86.6"/2200mm, 106.2"/2700mm, 126"/3200mm
	Z	98.4"/2500mm, 114.1"/2900mm
<b>*Volumetric Accuracy</b>	TP20	(2.7 + 0.4L/100) $\mu$ m
	TP200	(2.6 + 0.4L/100) $\mu$ m
	SP25M	(2.4 + 0.4L/100) $\mu$ m
<b>Scale Resolution</b>	0.00002"/0.0005mm	
<b>**Optimum Temp Range</b>	18 - 22°C	
<b>Operational Temp Range</b>	0 - 45°C	
<b>Table</b>	Granite	
<b>Table Load Capacity</b>	3300 lbs./1500 kg. as standard, options up to 9680 lbs./4400 kg.	
<b>Max. Velocity Vector</b>	600mm/sec	
<b>Max. Acceleration Vector</b>	600mm/sec <sup>2</sup>	
<b>Air Consumption</b>	50 l/min (1.8 cfm)	
<b>Required Air Pressure</b>	4 bar (60 psi)	

\*Maximum Permissible Error  $MPE_E$  according to 10360-2, 2009 within the thermal limits defined for optimum temperature range.

\*\*Installation environment thermal limits:  
Rate of change <1°C/hr and <2°C/24hr | Temperature gradient <1°C/m



Part Number	Description
MK4-ZN3-106-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 1000mm x (Z) 600mm
MK4-ZN3-108-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 1000mm x (Z) 800mm
MK4-ZN3-156-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 1500mm x (Z) 600mm
MK4-ZN3-158-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 1500mm x (Z) 800mm
MK4-ZN3-206-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 2000mm x (Z) 600mm
MK4-ZN3-208-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 2000mm x (Z) 800mm
MK4-ZN3-256-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 2500mm x (Z) 600mm
MK4-ZN3-258-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 2500mm x (Z) 800mm
MK4-ZN3-306-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 3000mm x (Z) 600mm
MK4-ZN3-308-SG-PCM	MARK 4 CMM - (X) 1000mm x (Y) 3000mm x (Z) 800mm



## Mark 5 - CMM

From strength to strength

As CMMs get larger, it is not simply a case of scaling up the design of smaller models. Stiffness of the structure is critical, but weight must also be kept to a minimum. The MARK 5 CMM is not only Fowler's largest, but it is the culmination of experience and excellence in the design and manufacture of innovative metrology equipment incorporating the very latest materials technology.

The revolutionary bridge of the MARK 5 incorporates aluminum honeycomb sheets developed for use in Formula One and the aerospace industry. The remarkable stiffness to weight ratio that this provides gives the MARK 5 an edge in both performance and speed.

The drive systems designed for the MARK 5 offer simplicity and reliability and the novel system used on the Y axis ensures that there is no degradation of performance across the full range of machine sizes offered up to 3m.

A big machine should also be able to measure a heavy component and this is another area where Fowler has applied innovative thinking. Rather than simply increasing the depth of the granite table, which adds huge cost and weight to the machine, we offer a specially designed load plate to sit on the granite base. This plate can accept up to a six ton load which will then be transmitted directly through the feet of the machine bench directly to the floor, meaning no loss of metrology performance.

### Features:

- Capable of measuring parts up to 6000 kg in weight
- Fitted with 0.0001mm linear encoders for superior accuracy
- Unique self-contained drive system ensures excellent performance over the entire measuring volume
- Choice of Y axis sizes ranging from 1000mm to 3000mm
- Supplied with the CMM touch screen joystick as standard
- Free software upgrades - no maintenance fees or contracts

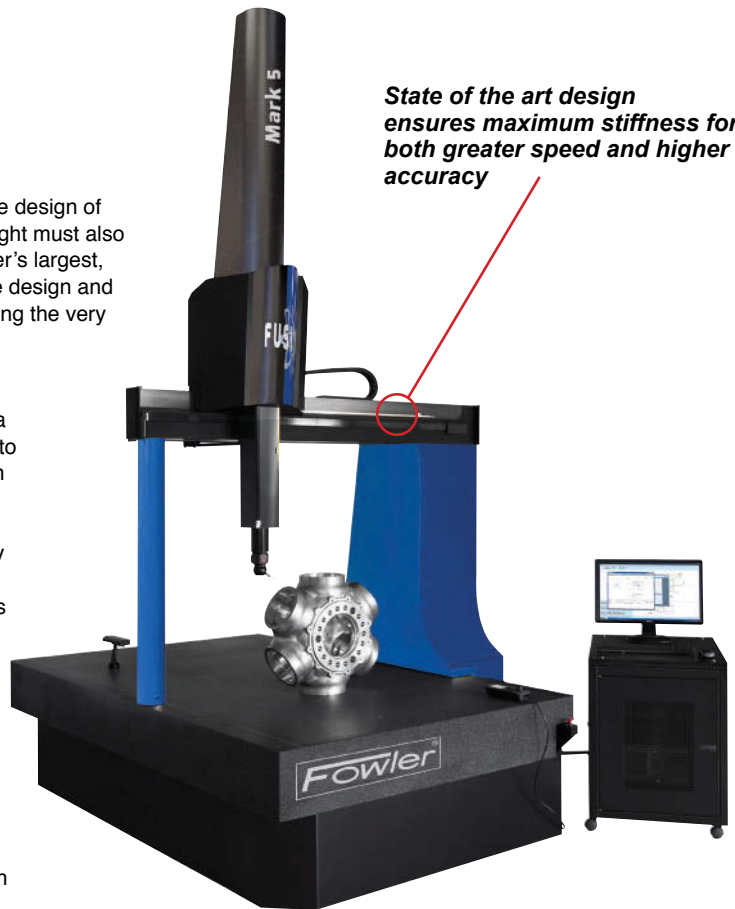
### Machine Options:

- Load plate for loads up to 6 tonnes
- Auto temperature compensation
- CCD camera system
- Collimated back light option
- Dual monitor
- Fixture kit

### Common Probe Options:

- PH10T (w/TP20, TP200)
- PH10M (w/SP25)
- PH6M (w/SP25)

*State of the art design ensures maximum stiffness for both greater speed and higher accuracy*

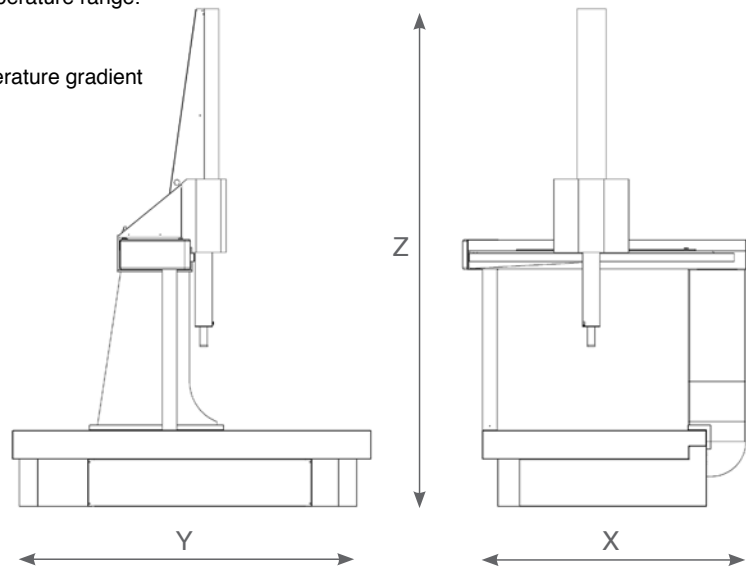


## Mark 5 - CMM

Technical Specifications	
<b>Axis Travel</b>	X 47.2"/1200mm Y 39.3"/1000mm, 59.0"/500mm, 78.7"/2000mm, 88.4"/2500mm, 118.1"/3000mm Z 39.3"/1000mm
<b>Overall Size</b>	X 76.3"/1940mm Y 78.7"/2000mm, 98.4"/2500mm, 118.1"/3000mm, 137.8"/3500mm, 157.4"/4000mm Z 141.5"/3595mm
<b>*Volumetric Accuracy</b>	TP20 (2.9 + 0.4L/100) $\mu\text{m}$ TP200 (2.8 + 0.4L/100) $\mu\text{m}$ SP25M (2.6 + 0.4L/100) $\mu\text{m}$
<b>Scale Resolution</b>	0.0001"0.0001mm
<b>**Optimum Temp Range</b>	18 - 22°C
<b>Operational Temp Range</b>	0 - 45°C
<b>Table</b>	Granite
<b>Table Load Capacity</b>	1320 lbs./1500 kg. as standard, options up to 3200 lbs./6000 kg.
<b>Max. Velocity Vector</b>	600mm/sec
<b>Max. Acceleration Vector</b>	850mm/sec <sup>2</sup>
<b>Air Consumption</b>	50 l/min (1.8 cfm)
<b>Required Air Pressure</b>	4 bar (60 psi)

\*Maximum Permissible Error  $MPE_E$  according to 10360-2, 2009 within the thermal limits defined for optimum temperature range.

\*\*Installation environment thermal limits:  
Rate of change <1°C/hr and <2°C/24hr | Temperature gradient <1°C/m



Part Number	Description
MK5-10-SG-PCM	MARK 5 CMM - (X) 1200mm x (Y) 1000mm x (Z) 1000mm
MK5-15-SG-PCM	MARK 5 CMM - (X) 1200mm x (Y) 1500mm x (Z) 1000mm
MK5-20-SG-PCM	MARK 5 CMM - (X) 1200mm x (Y) 2000mm x (Z) 1000mm
MK5-25-SG-PCM	MARK 5 CMM - (X) 1200mm x (Y) 2500mm x (Z) 1000mm
MK5-30-SG-PCM	MARK 5 CMM - (X) 1200mm x (Y) 3000mm x (Z) 1000mm

## CMM - Probe Options



CMM'S  
Geometrical Measurements

Every bridge-type FUSION CMM fully supports the range of probe heads and both touch trigger and scanning probes supplied by Renishaw. The following are common options:



### TP8 Probe - supplied as standard

The TP8 probe offers an entry level option for customers that require infrequent indexing of the probe and no indexing during the running of a measurement programme. The TP8 is supplied with two knuckle joints to allow infinite alignment of the probe to the feature being measured, but this alignment is non-repeatable, meaning that the stylus will need to be requalified following each index. The TP8 probe accepts the M3 range of styli.

### MH20i Probe Head

The MH20i probe offers repeatable manual indexing of the probe head from 0° to 90° in the A axis and through 360° in the B axis, in 15° increments. Ideal for manual CMMs, it can also be used on CNC models, but will require intervention from the operator whenever indexing is required. The MH20i uses a TP20 stylus module, which in turn accepts the M2 range of styli.



MH20i



### RTP20 Probe Head

The RTP20 probe offers a really cost effective solution for customers that require automatic indexing on CNC machines. Modelled on the MH20i body, the RTP20 uses the CNC motion of the CMM to position itself using a post mounted to the bed of the machine. Like the MH20i it is able to index from 0° to 90° in the A axis and through 360° in the B axis, in 15° increments and uses a TP20 stylus module, which in turn accepts the M2 range of styli. The RTP20 is also fully compatible with the MCR20 change rack to provide an option that provides both automatic stylus changing as well as automatic indexing.

RTP20

### PH10T Probe Head

The PH10T is a fully motorized probe head that offers immediate indexing from 0° to 105° in the A axis and through 360° in the B axis, in 7.5° increments. This probe head should be used by customers requiring frequent indexing or when more precise alignment to the features being measured is required.



PH10T  
probe head fitted  
w/ TP20 probe

Common probe options for the PH10T:

#### TP200

The TP200 probe utilizes strain gage technology and so does not exhibit lobing characteristics and therefore should be considered by customers requiring more accurate measurement of form. It can be used with the SCR200 change rack for automatic stylus changing and the TP200 modules are available as standard or low force for use with M2 styli up to 100mm long.

#### TP20

The TP20 is a robust probe for general purpose measurement that can be used in conjunction with the MCR20 change rack to facilitate automatic stylus changing. The TP20 stylus modules can be supplied with different trigger forces which accept M2 styli up to 60mm long, and with different length modules to assist with probing at greater depths.

Part Number	Description
MH20i	MH20i Probe Head
RTP20	RTP20 Probe Head
PH10T - TP20	PH10T - TP20 Probe Head (Probe rack included)
PH10T - TP200	PH10T - TP200 Probe Head (Probe rack included)



## CMM - Probe Options

### PH10M Probe Head

Like the PH10T probe head, the PH10M is also a fully motorised probe head that offer immediate indexing from 0° to 105° in the A axis and through 360° in the B axis, in 7.5° increments. The M head, however, incorporates an autojoint with multiwire capability, which is necessary for the SP25M scanning probe. The PH10M probe head can also be fitted with either TP20 or TP200 probes and should be chosen in preference to the PH10T when using these probes if the future use of a scanning technology may be required.



*PH10M  
with SP25M  
scanning  
probe*



*PH6M with  
SP25M  
scanning  
probe*

### PH6M Probe Head

This head provides a fixed autojoint for when an SP25M scanning probe is needed without the requirement for indexing.

### SP25M Scanning Probe

The SP25M scanning probe uses an isolated optical metrology transducer system to enable extremely accurate measurements to be taken with the stylus in continuous contact with the feature being inspected. This enables more data to be taken which is important when form is critical. A range of modules are available for the SP25M to provide optimised scanning performance using M3 styli up to 400mm long.

Probe Comparison							
	Integral Probe	Index Motion	Maximum Length	Index Resolution	Index Positions	Repeatable Indexing	Repeatable Stylus Charging
TP8	Yes	Manual	105mm	Infinite	Infinite	No	No
MH20i	Yes	Manual	150mm	15°	168	Yes	Yes
RTP20	Yes	Automated	168mm	15°	168	Yes	Yes
PH10T	No	Motorized	450mm	7.5°	720	Yes	Yes
PH6M	No	No	450mm	No	No	No	Yes
PH10M	No	Motorized	450mm	7.5°	720	Yes	Yes

Part Number	Description
PH10M - TP20	PH10M Probe Head
PH10M - TP200	PH10M Probe Head
PH6M - SP25 - FCR	PH6M Probe Head
PH6M - SP25 - MRS	PH6M Probe Head
PH10M - SP25 - FCR	Scanning Probe Head
PH10M - SP25 - MRS	Scanning Probe Head

## CMM Accessories

### Further CMM Enhancements

From vision measurement tools to motion control interfaces, Fowler offers a comprehensive range of optional accessories to further enhance the measurement capabilities of your coordinate measuring machine.

### CMM Camera

#### Touch and Vision on the same machine

Fowler's FUSION camera system offers a non-contact facility on any FUSION CMM. A clever design of magnetic, kinematic joint allows the probe and camera to be swapped in just seconds. This means that components can be inspected using both touch trigger and vision inspection technology on the same machine.

The camera incorporates a telecentric lens that gives a distortion-free image on the monitor. It also contains a fully programmable 16-LED light ring which contains alternate white and UV LEDs. The white LEDs provide surface illumination in the normal manner while the UV LEDs provide an ingenious solution to the perennial problem of backlighting on a CMM - the component to be measured is simply placed on a plate containing special reflective paper.



CCD-USBII-Series

### Probe Rack

Probe module change rack, 6 port.  
For use with multiple probe configurations.



54-303-016-3

### Automation Interface Unit

The FUSION automation interface adds the capability for FUSION 3D programs to be remotely controlled and monitored using an external system allowing any FUSION CMM to be integrated with an automated component handling system, whether this be a fully controlled, PLC driven manufacturing system, a robotic loader or just an automatic bar feeder. The package comprises of an optically isolated digital I/O system and a software module that enables the software to be setup to follow a defined operating sequence to allow the automated operation.

The automation interface includes documentation and a software utility package, but because of the need to have detailed knowledge for the automated handling system for each installation, integration must be handled by the system integrator and cannot be supported by Fowler FUSION.



AUTOM-IF

## CMM Accessories

Further CMM Enhancements

### Collimated Back Light

The CMM collimated light enables backlight illumination of 3D or turned components when used with the CMM Camera System. When using collimated light to backlight components, a clear and crisp silhouette, similar to using a profile projector, is produced. A single-LED collimated light features a compact, lightweight design which is perfect for the MARK 2 range of CMMs and is fully programmable and controllable within FUSION vision software.

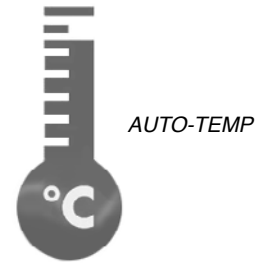


### Automatic Temperature Compensation

The FUSION Temperature Compensation option enables your CMM to maintain accuracy in an uncontrolled environment, such as on the shop floor.

In an ideal world, your CMM would be installed in a perfectly temperature controlled room. However, in the real world of manufacturing, sometimes that isn't possible or practical because you need your CMM next to where your parts are being made.

A USB temperature sensor embedded in the bridge of the CMM provides feedback to compensate as though measurements have been taken at 20°C.



### Dual Monitor

The vertically mounted dual-monitor arm enables FUSION CAD or Vision software modules to be viewed on a separate tiltable screen to the FUSION 3D inspection software.



### Air Dryer

To ensure a good quality air supply and maximise the performance and life of the CMM, an air dryer is highly recommended.

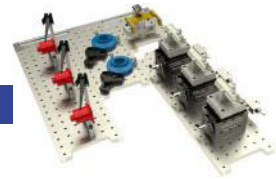
Contact Fowler Sales Department for more information 1-800-788-2353



Part Number	Description
Accessories	
CCD-USBII-250	CMM Camera System with 250 x 250mm Plate
CCD-USBII-600	CMM Camera System with 450 x 495mm Plate
CCD-USBII-900	CMM Camera System with 750 x 495mm Plate
CCD-PREP	Prep Kit for CMM Camera System
54-303-016-3	Probe Rack
AUTOM-IF	Automation Interface Unit
COL-BL-120	Collimated Back Light
AUTO-TEMP	Automatic Temperature Compensation
DUAL-MON	Dual Monitor
FUSION Software	
54-950-106-0	FUSION 3D CAD Comparison Module
54-950-106-1	FUSION 3D CAD Comparison Module - <b>Off-line</b>
54-950-107-0	FUSION Programming from CAD Module
54-950-107-1	FUSION 3D Programming from CAD Module - <b>Off-line</b>
54-950-108-0	FUSION 3D Geometric Measurement Software

# MARK CMM - Loc-N-Load™ Fixture Systems

Choose Loc-N-Load™ for traditional CMMs, Optical Comparators and Gage Arms

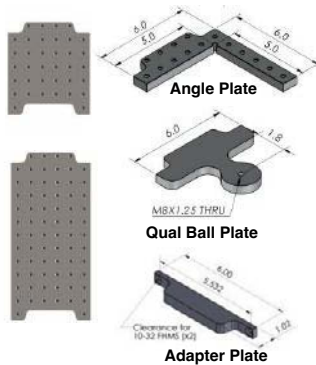


## Loc-N-Load™ Fixture Systems

**Inch 1/4-20** Clear Anodized Aluminum 1x1" hole pattern, 1/2" thick  
**Metric M6** Clear Anodized Aluminum 20x20mm hole pattern, 12.7mm

Part Number	Description	Part Number	Description
SYS05_DK12TR03	CMM 12" Dock, Plates + 58 pc Starter Kit	YSYM1_DK360TR03	CMM 360mm Dock, Plates + 58 pc Starter Kit
SYS05_DK12TR02	CMM 12" Dock, Plates + 70 pc Complete Kit	YSYM1_DK360TR02	CMM 360mm Dock, Plates + 70 pc Complete Kit
SYS05_DK12TR01	CMM 12" Dock, Plates + 146 pc Works Kit	YSYM1_DK360TR01	CMM 360mm Dock, Plates + 139 pc Works Kit
SYS10_DK18TR03	CMM 18" Dock, Plates + 58 pc Starter Kit	YSYM2_DK540TR03	CMM 540mm Dock, Plates + 58 pc Starter Kit
SYS10_DK18TR02	CMM 18" Dock, Plates + 70 pc Complete Kit	YSYM2_DK540TR02	CMM 540mm Dock, Plates + 70 pc Complete Kit
SYS10_DK18TR01	CMM 18" Dock, Plates + 146 pc Works Kit	YSYM2_DK540TR01	CMM 540mm Dock, Plates + 139 pc Works Kit
SYS20_DK30TR03	CMM 30" Dock, Plates + 58 pc Starter Kit	YSYM3_DK720TR03	CMM 720mm Dock, Plates + 58 pc Starter Kit
SYS20_DK30TR02	CMM 30" Dock, Plates + 70 pc Complete Kit	YSYM3_DK720TR02	CMM 720mm Dock, Plates + 70 pc Complete Kit
SYS20_DK30TR01	CMM 30" Dock, Plates + 146 pc Works Kit	YSYM3_DK720TR01	CMM 720mm Dock, Plates + 139 pc Works Kit
SYS60_OC6TR03	Optical Comparator 6" Dock/Plates+ 58 pc Starter	YSYS60M_OC180TR03	Optical Comparator 180mm Dock/Plates+ 58 pc Kit
SYS60_DK24TR02	Gage Arm 24" Dock/Plates +70 pc Complete Kit	YSYS60M_DK540TR02	Gage Arm 540mm Dock/Plates +70 pc Complete Kit

## Loc-N-Load™ ALUMINUM - Individual Rails, Plates and Speciality Plates



### Loc-N-Load™ ALUMINUM

#### Speciality Plates

Part Number	Description
<b>Inch - 1/4-20</b>	
LNL-ADPT-06	Adapter Plate
LNL-ANGL-0603	Angle Plate
LNL-QUAL-PLT	Qualifying Ball Plate
LNL-0606-4X	Indexable Plate
LNL-RND-0608	Radial Plate
<b>Metric - M6</b>	
LNL-ADPT-M6	Adapter Plate
LNL-ANGL-M6	Angle Plate
LNL-QUAL-PLT-M	Qualifying Ball Plate

#### Radial/Indexable Plates

Part Number	Description	Part Number	Description
<b>Inch - 1/4-20</b>		<b>Metric - M6</b>	
LNL-DOCK-12	12" Dock	LNL-DOCK-M360	360 Dock
LNL-DOCK-18	18" Dock	LNL-DOCK-M540	540 Dock
LNL-DOCK-30	30" Dock	LNL-DOCK-M720	720 Dock
LNL-PLT-0606	6x6" Plate	LNL-M180180	180x180 Plate
LNL-PLT-0612	6x12" Plate	LNL-M180360	180x360 Plate
LNL-PLT-0618	6x18" Plate	LNL-M360360	360x360 Plate
LNL-PLT-1212	12x12" Plate	LNL-M360540	360x540 Plate
LNL-PLT-1218	12x18" Plate		
LNL-PLT-1818	18x18" Plate		
LNL-PLT-1824	18x24" Plate		

CMM'S Geometrical Measurements

## Vises and Speciality Work Holding

### Rapid-Loc™ & Modular Tower

Part Number	Description
<b>Inch - 1/4-20</b>	
RL-VISE-SYS02	Rapid-Loc™ Vise System
MT2-SYS-01	Modular Tower System
<b>Metric - M6</b>	
RML-ADAPT-02	Base Plate Adapter for METRIC Rapid-Loc™



### Rapid-Loc™ & Riser-Grip™

Part Number	Description
<b>Inch - 1/4-20</b>	
SC-06-03	3 Leg 6" Spider Clamp
SC-06-01	1 Leg 3" Spider Clamp
SP-VISE-2.50	Spanner Vise, 2pc.
CC-ER11	ER Collet Chuck
CC-ER16	ER Collet Chuck, flanged
RG-2.75	Riser-Grip™, adjustable
<b>Metric - M6</b>	
SC-06-03-M	3 Leg 6" Spider Clamp
SC-06-01-M	1 Leg 3" Spider Clamp
RG-2.75	Riser-Grip™, adjustable



## Work Holding Kits and Sets



Part Number	Description
<b>Inch - 1/4-20</b>	
TR-KIT-03	Starter Kit - 58pcs.
TR-KIT-02	Complete Kit - 70pcs.
TR-KIT-01	Works Kit - 146pcs.
MAGN-SET-30	Magnetic Riser Set - 23pcs.
STOF-SET-30	Stand-Off & Rest Pad - 37pcs.
STOFE-SET-30	Enhanced Stand-Off - 16pcs.
<b>Metric - M6</b>	
TR-KIT-03M	Starter Kit - 58pcs.
TR-KIT-02M	Complete Kit - 70pcs.
TR-KIT-01M	Works Kit - 146pcs.
MAGN-SET-30M	Magnetic Riser Set - 23pcs.
STOF-SET-30M	Stand-Off & Rest Pad - 37pcs.
STOFE-SET-30M	Enhanced Stand-Off - 16pcs.

## Speciality Work Holding and Featured Products

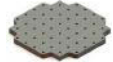
### Radial Plate

Perfect for holding round parts. Laser marked rings make aligning easy. **Part Number: LNL-RND-0608**



### Indexable Plate

Great for inspecting complex parts. Turn and lock plate to access hard to reach features. **Part Number: LNL-0606-4x**



### Spider-Clamp™ 3-Legged

Hold round parts from 1.18" to 6" in dia. Delicate parts held without distortion. great vision inspection. **Part Number: SC-06-03**



### Spider-Clamp™ 1-Legged

Use several of these 3" clamps to hold parts of infinite size and shape. **Part Number: SC-06-01**



### Spanner-Vise™

2-piece vise can infinitely adjust to accommodate workpiece - lock down securely. **Part Number: SP-VISE-2.5**



### ER11 & ER16 Collet Chucks

Hold small dia. parts and create multi-part fixtures. Opening from 0.012"-0.312" and from 0.012"-0.416". ER16 is flanged for greater stability



**Part Numbers: CC-ER11 CC-ER16**

### Sturdy Lever Clamp

2.5" length provides up to 30lbs. of force for larger parts.



**Part Number: LC-2.50**

### Vision Corner Block

Allows complete view of the part on a vision stage.



**Part Number: VCB-150M**



## DCC Coordinate Measuring Machine

The world's first portable direct computer controlled CMM weighing only 30 lbs.

### A revolutionary solution to a complicated problem

Utilizing advanced technology, materials, software and electronics, the zCAT is manufactured as a compact, self-contained unit that is fundamentally different than existing CMM's. The zCAT has an extremely large measurement envelope with a small portable footprint. From initial equipment acquisition, through set-up, training and maintenance, the zCAT offers the best CMM value without compromising measuring accuracy or performance.

### Easy-to-use

The zCAT is the easiest DCC CMM to use. Built with the intention of lowering the amount of training needed to successfully operate and program a CMM. Every component, from the mechanics to the software, has been examined for optimal user experience and ease of use.

### Software

The zCAT comes with ControlCAT, a built-in, easy-to-use, geometric measurement software controlled through an intuitive, icon-based touchscreen interface. Take advantage of the DCC measurements without the need for a secondary computer. From shop technicians to dedicated CMM operators, anyone can feel comfortable operating the zCAT.

### Programming

The zCAT can also be controlled by Fowler FUSION, our industry leading 3D metrology software. Fowler FUSION is not only the easiest CMM software to learn, but can be configured with the additional CAD Comparison module that allows for direct comparison of measurement data to CAD models, reverse engineering model export, GD & T tolerancing and many other time-saving features. Automate measuring processes, and gain accurate data time after time. One feature found only in the zCAT is the ability to seamlessly shift from direct computer control to manual control without flipping switches or changing modes. Simply, move the probe manually, and the computer will remember and reproduce the movements for accurate, repeatable measurements.

### Components

- zCAT CMM - 4 Axes
- ControlCAT metrology software
  - Easy to use geometric measurement tool
  - Measures manually or DCC. Creates constructions for most common geometrics including:
 

Planes	Lines	Points	Spheres	Angles	PCDs
Circles	Slots	Cones	Reference points	Cylinders	Cloud data
  - Reports actual and nominal information to Excel spreadsheet
  - Program remembers geometry and plays back for repetitive part measurements
- Renishaw TP20 probe
- Battery
- Ethernet communication (Bluetooth optional)
- I++ software interface
- zCAT Wedge excel export software
- Training part and calibration sphere
- Quick start guide
- zCAT dust cover
- Reusable shipping container



Battery powered



**zCAT**

Technical Specifications	
Working Volume	X and Y 700mm diameter, Z 250mm
Overall Accuracy ( $\mu\text{m}$ )	0.008mm + (D/100mm)
Fixturing Accuracy Requirement	5mm
Machine Speed	User controlled to 150 mmps
Machine Air Requirement	None required
Construction	Stainless steel for all structural components
Machine Power Requirements	100-240 V AC $\pm$ 10%, 50-60Hz
Battery Life	4 hours with normal use, 3 hours at peak
Power Consumption	Peak 15 W, normal 10 W
Manual Motion Control	User controlled by hand movement of probe
Controller	Onboard PCB provides motion control, error mapping, I++ interface and ControlCAT metrology software
Temperature Compensation	Onboard monitoring and compensation
Probe Type	Renishaw TP20 probe
Machine Weight	13.6 kg., 30 lbs.
Machine Dimensions (W x D x H)	420mm x 172mm x 620mm



Part Number	Description
54-950-001-0	zCAT Portable CMM
54-950-105-0	FUSION 3D Software
Accessories	
54-950-200-0	1mm Ball Probe Module - Vertical & Horizontal
54-950-201-0	Vertical only 2mm Probe
54-950-202-0	Horizontal only 2mm Probe
54-950-120-0	Calibration Service
54-950-110-0	5 Year Service and Calibration Contract
54-950-115-0	Extended 5 Year Warranty

## zCAT - Loc-N-Load™ Fixture Systems

Further enhance the value of zCAT with the LEAN, quick-swap Loc-N-Load™ fixture system. Install zCAT onto the unique Loc-N-Load™ base and start inspecting on the shop floor, nearest conference room table, or metrology lab. Interlocking fixture plates quickly secure and release with the use of magnets creating highly repeatable setups.

- Create multiple fast-swap setups for your zCAT!
- Ready-made interlocking plates make low-cost fixtures
- Inspect more parts per shift, even with less-skilled inspectors
- Easily access your granite
- Use as dedicated tooling - add to job box

Get started with a pre-configured bundle and add plates as work requires. Creating a LEAN QC department is simple with zCAT and Loc-N-Load™ quick-swap fixturing.



### Choose a bundled set of Loc-N-Load™ fixture plates

#### Bundle includes

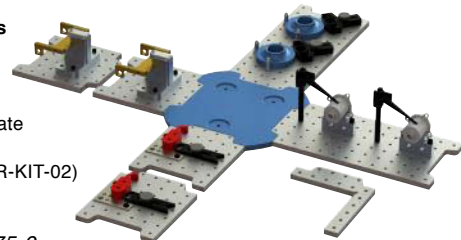
- 1 Base
- 4 6 x 12 plates
- 1 Qualifying plate
- 1 Angle plate
- 1 Clamp kit (TR-KIT-02)



54-950-170-0

#### Bundle includes

- 1 Base
- 4 6 x 6 plates
- 2 6 x 12 plates
- 1 Qualifying plate
- 1 Angle plate
- 1 Clamp kit (TR-KIT-02)

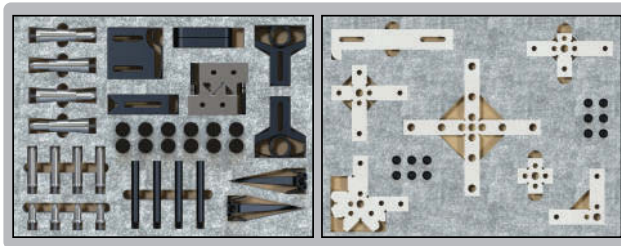


54-950-175-0

**System Accessories also included:** A unique plate for the qualifying ball/bar that can be removed quickly when not in use and angle plate as a stop to locate and inspect right on the granite.

### Each bundled system comes complete with this versatile 64 piece Work Holding Kit

A Work Holding Kit with a variety of non-marring spring-action clamps, stand-offs, and low profile stops and rails is included with each fixture system



54-950-185-0

#### Work Holding Kit (54-950-185-0)

Includes:

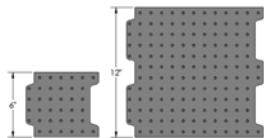
- 4 Cross-Bow™ Clamp
- 4 D-Block™ Stop
- 4 Trigger-Block™ Clamp
- 12 Silver-Bullet™, 4 sets / 3
- 4 Steel shaft / stand-off
- 2 Trigger-Finger™
- 2 Hole Adjuster
- 7 Simple-Stop™ Rails, 1 set / 7
- 25 Hex Keys, plus assorted screws

### Additional Individual Loc-N-Load™ fixture plates or zCAT bases

Order additional Loc-N-Load™ fixture plates and work holding as required. Fixture part families affordably for quick-swap of parts and faster inspections whether you're on the shop floor or metrology lab. Made of clear anodized aluminum, 0.5" thick, 1 x 1" spacing, 1/4-20 thread. Inquire about metric.



54-950-186-0



54-950-188-0



54-950-181-0



54-950-182-0



54-950-189-0

#### Loc-N-Load™ Fixture Systems

Part Number	Description
54-950-170-0	Loc-N-Load™ Quick-Swap fixture system - No. 1
54-950-175-0	Loc-N-Load™ Quick-Swap fixture system - No. 2
54-950-180-0	Loc-N-Load™ Base plate ONLY
54-950-185-0	Loc-N-Load™ Work holding kit
Additional Loc-N-Load™ Fixture Plates - Rails, End Caps, Plates	
54-950-186-0	6"/152.4mm x 6"/152.4mm fixture plate
54-950-187-0	6"/152.4mm x 12"/304.4mm fixture plate
54-950-188-0	6"/152.4mm x 18"/457.2mm fixture plate
54-950-189-0	12"/304.8mm x 12"/304.8mm fixture plate
Accessories for Loc-N-Load™ Plates	
54-950-181-0	Adapter plate 6"/152.4mm x 1"/25.4mm
54-950-182-0	Angle plate/ Stop 6"/152.4mm x 6"/152.4mm

## A-Line Portable Measuring Arms

The Fowler Trimos A-line portable articulated measuring arms, assure an extremely easy and accurate 3D measurement. The A-line arms, certified according to ISO10360-2 standards, allow quality control, inspection, and verification of small and large size parts. Thanks to an extremely stable carbon structure, all models are light and easy to operate. You can choose between the A3, A5 and A6 models according to your specific application.

### Features:

- Measuring ranges from 10"/250mm to 360"/9000mm
- Extremely easy to use
- Certified according to ISO 10360-2 standard
- Arms are configured with 6 or 7 axes
- Protected with an electromagnetic brake
- Laser scanning models available

### A-Line Models

#### A3

The A3 is the newest model of the Fowler Trimos A-line portable articulated measuring arms. Its particularly small size enables you to take it anywhere.

The 6-axis configuration arm is available in 51"/1300mm and 70"/1800mm measuring ranges. The carbon fiber tubes and aluminum mount base gives the A3 arm an extremely stable and light structure. With its mass counterbalance, an effortless handling experience is guaranteed.

#### A5 and A6

The A5 and A6 models represent the entry level of Trimos measuring arms. Reliability, accuracy and flexibility in use are their main characteristics.

The A5 and A6 arms exist in 6 or 7 axis configurations with 70"/1800mm to 354"/9000mm measuring ranges. They can also be used in combination with Laser Scanners for point cloud inspection or reverse-engineering. The A5 and A6 arms have magnetic brakes to prevent accidental fall of the arm and advanced electronics for better performance.

If you need to inspect a large, heavy part, don't move it, take the A5 - A6 arms to it and get your measurements done quickly with great flexibility.

These models have a measuring range of 9M with an incredible accuracy of 0.004"/0.1mm. This accuracy is attained due to our extensive experience in large volume metrology. The A7-A8 models are equipped with electromagnetic brakes on the second axis, which allows you to lock it at a required height and use the arm safely and comfortably.



## A-Line Portable Measuring Arms

### Applications



*Inspection*



*Automotive*



*Aerospace*



*Aviation*

### Accessories



#### **Hard Probe - 54-960-230-0**

The mechanical probe is the standard touch probe, available with different sphere diameters. Points can be taken by touching the part and pushing the button on board the probe body. The smallest usable probe diameter is 1mm to guarantee the point accuracy. The maximum suggested length is 100mm.



#### **Floating Probe - 54-960-225-0**

It is a rigid mechanical probe suspended on a spring and driven by an aluminum ring that triggers the probe with a simple touch. The integrated force control avoids uncontrolled load on the part, improving accuracy and repeatability. The control ring is isolated from the probe stylus to avoid thermal impact from the hands of the user.



#### **Touch Trigger Probe - 54-960-240-0**

The touch trigger probe acquires measuring points by applying the minimum force on the measured part. It is very precise, quick and comfortable to use, and acquires points by only touching the surface, without triggering buttons.



#### **Fastening Bases - 54-960-260-0**

Mobile tripods, stable and practical, are the ideal accessory to move all A-line arms easily and quickly. The tripod is adjustable in height (range 900-1400mm) and the weight of the tripod column is balanced by a gas spring. A side handle allows for vertical and horizontal movement. A removable and rotary shelf allows positioning of the laptop next to the measuring arm.



#### **Magnetic Base - 54-960-261-0**

The magnetic base allows the instrument to produce the highest precision with minimum installation effort.



## A-Line Portable Measuring Arms

### Laser Scanner

For complex-profile contour scanning, various Laser Scanners can be combined with our 7 axes arms. Fowler is pleased to offer the PreciTrack 3D Laser Scanner for seamless non-contact inspections

**Please contact our Technical Team for software options 1-800-788-2353**



PreciTrack 3D		
Speed	Hz, Pts/Sec	300 Hz, 348 000 Pts/Sec
Resolution X-Axis	Points/Line	12800
Line Width	in(mm)	1"(25) / 2"(50) / 4"(100)
Working Distance	in(mm)	2.1"(53) / 2.75"(70) / 6.7"(170)
Working Range	in(mm)	1"(25) / 2"(50) / 4"(100)
Resolution	µm	19 / 39 / 78
Material Sensitivity		Light to Dark Shiny to Matte
Light Source		405 nm Blue 658 nm Red
Laser Class		2M (Default) 3R (Optional)
Multi Sensoric		YES
PC Interface		Ethernet
Scanner Interface		PRECI Link Kabel
RetroFit Kit		YES

A-Line Arm & ALP Laser Scanner Accuracy	Measuring Range	Tactile Volumetric Accuracy*	Laser Scanner Volumetric Accuracy**	Weight
A-Line Arm 1.8m - 7 Axis	70.9"/1800mm	0.0011"/0.027mm	0.0013"/0.032mm	21 lbs./9.7 kg
A-Line Arm 2.5m - 7 Axis	98.4"/2500mm	0.0013"/0.034mm	0.0016"/0.040mm	22 lbs./ 10.2 kg
A-Line Arm 3.2m - 7 Axis	126.0"/3200mm	0.0018"/0.045mm	0.0021"/0.053mm	23 lbs./10.6 kg
A-Line Arm 4.0m - 7 Axis	157.5"/4000mm	0.0022"/0.056mm	0.0026"/0.065mm	25 lbs./11.3 kg
A-Line Arm 5.0m - 7 Axis	196.9"/5000mm	0.0030"/0.075mm	0.0034"/0.087mm	31 lbs./13.9 kg
A-Line Arm 7.0m - 7 Axis	275.6"/7000mm	0.0035"/0.090mm	0.0041"/0.104mm	34 lbs./15.4 kg
A-Line Arm 9.0m - 7 Axis	354.3"/9000mm	0.0043"/0.110mm	0.0050"/0.127mm	39 lbs./17.9mm

Part Number	Description
54-960-101-0	PreciTrack 3D Blue Laser Scanner
54-960-101-1	PreciTrack 3D Red Laser Scanner
54-960-304-0*	Polyworks 3D Laser Scanner Software
54-960-310-0*	NX (UG) Translator Native CAD file translator for NX (UG), node-locked

**\*Must be used with laser scanner**

### AT - Tube Measurement System

The perfect equipment for pipe inspection with a laser fork and dedicated software.

Based on the A5 and A6 arm designs, it is a portable articulated arm CMM ideal for the quick and accurate inspection of pipes and other parts within its range. The Fowler-Trimos AT is a 6 axis arm available in several sizes, from 71"/1800mm to 197"/5000mm. The counter-balance system, with double springs provides an instrument with extremely light weight and easy handling. The AT portable arm unit can be placed on the top of the table with a support or just directly on a rigid laminate top surface. It may be also used with a mobile tripod.



Axes	Measuring Range	Volumetric Accuracy with Laser Fork**	Touch Probe Point Accuracy*	Point Repeatability*	Weight
6	71"/1800mm	0.0022"/0.056mm	0.0010"/0.025mm	0.0008"/0.02mm	17.4lbs./7.9kg
6	98"/2500mm	0.0025"/0.063mm	0.0014"/0.036mm	0.0011"/0.028mm	18.5lbs./8.4kg
6	126"/3200mm	0.0028"/0.072mm	0.0018"/0.045mm	0.0014"/0.035mm	19.4lbs./8.8kg
6	157"/4000mm	0.0039"/0.099mm	0.0024"/0.06mm	0.0018"/0.045mm	20.9lbs./9.5kg
6	197"/5000mm	0.0048"/0.122mm	0.0035"/0.09mm	0.0024"/0.06mm	25.3lbs./11.5kg

\* 2 sigma error, \*\* with 50mm fork



## A-Line Portable Measuring Arms

### AT - Tube Measurement System



Pipe measurement with laser fork

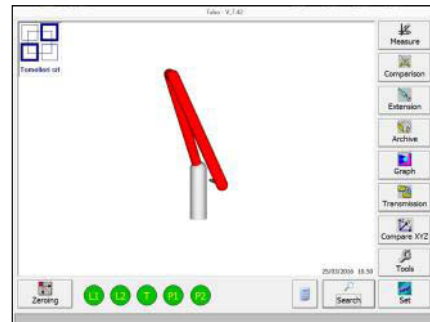


Pipe measurement with touch probe

### Software Tubo

Software TUBO assures the performance of your pipe measurements:

- Straight tubes
- Bent tubes, measuring just the straight lengths
- Bends (survey the bending radius)
- Consecutive bends (absence of straight length between one bend and another bend, also called bend-in-bend)
- Scaled tube
- Secondary tubes welded to the main tube
- RCV (variable radius bend) tubes
- Tubes having non circular sections (profiles)
- Possibility to change tube diameter during the measuring procedure



### Comparisons and correction

- Comparison and correction (classic mode) linked to the CNC
- Spring back correction (20 - 120)
- Alignment: possibility to obtain the data of the measured tube regarding (aligned) a master tube that is already in memory, to an external reference or to a drawing (manual and automatic procedure).
- Creation of material archive for the spring-back compensation to apply to the bending program.

### Laser Fork

Ideal accessory for the rapid measurement without direct contact of the pipe.

5 forks size are available: 1.2"/30mm, 2"/50mm, 3.2"/80mm, 5.9"/150mm, 7.8"/200mm

The smaller forks feature a laser pointer to spot small pipes during the measurement. Pipes from 2mm to 180mm in diameter can be measured with the use of a laser fork, larger diameters can be measured with the touch probe.



## A-Line Portable Measuring Arms

### Technical Specifications

Part Number	Axes	Measuring Range	Volumetric Accuracy	Point Repeatability	Weight
<b>A3</b>					
54-960-001-0	6	51"/1300mm	0.0006"/0.015mm	0.0003"/0.008mm	20lbs./9.5kg
54-960-002-0	6	70"/1800mm	0.0007"/0.018mm	0.0003"/0.008mm	23lbs./10.4kg
<b>A5</b>					
54-960-020-0	6	70"/1800mm	0.0007"/0.020mm	0.0004"/0.012mm	18lbs./8.4kg
54-960-021-0	6	98"/2500mm	0.0010"/0.026mm	0.0006"/0.016mm	19lbs./8.9kg
54-960-022-0	6	125"/3200mm	0.0014"/0.036mm	0.0008"/0.020mm	20lbs./9.3kg
54-960-023-0	6	157"/4000mm	0.0018"/0.046mm	0.0009"/0.024mm	23lbs./10kg
54-960-040-0	6	196"/5000mm	0.0025"/0.065mm	0.0015"/0.038mm	27lbs./12.5kg
54-960-041-0	6	275"/7000mm	0.0031"/0.080mm	0.0018"/0.048mm	31lbs./14kg
54-960-042-0	6	354"/9000mm	0.0039"/0.100mm	0.0023"/0.060mm	36lbs./16.5kg
<b>A6</b>					
54-960-030-0	7	70"/1800mm	0.0010"/0.027mm	0.0006"/0.017mm	19lbs./8.9kg
54-960-031-0	7	98"/2500mm	0.0013"/0.034mm	0.0008"/0.021mm	20lbs./9.4kg
54-960-032-0	7	125"/3200mm	0.0017"/0.045mm	0.0010"/0.026mm	21lbs./9.8kg
54-960-033-0	7	157"/4000mm	0.0022"/0.056mm	0.0011"/0.030mm	23lbs./10.5kg
54-960-050-0	7	196"/5000mm	0.0029"/0.075mm	0.0019"/0.050mm	30lbs./13.5kg
54-960-051-0	7	275"/7000mm	0.0035"/0.090mm	0.0023"/0.060mm	33lbs./15kg
54-960-052-0	7	354"/9000mm	0.0043"/0.110mm	0.0027"/0.070mm	38lbs./17.2kg

### Accuracies

Part Number	Axes	$E_{Bi}^1$	$P_{size}^2$	$P_{form}^3$	$L_{dia}^4$
<b>A5</b>					
54-960-020-0	6	0.0009"/0.023mm	0.0003"/0.007mm	0.0006"/0.015mm	0.0010"/0.025mm
54-960-021-0	6	0.0012"/0.030mm	0.0004"/0.010mm	0.0007"/0.019mm	0.0013"/0.032mm
54-960-022-0	6	0.0017"/0.042mm	0.0006"/0.014mm	0.0010"/0.025mm	0.0018"/0.045mm
54-960-023-0	6	0.0022"/0.057mm	0.0007"/0.018mm	0.0013"/0.033mm	0.0024"/0.062mm
54-960-040-0	6	0.0031"/0.078mm	0.0009"/0.024mm	0.0017"/0.042mm	0.0033"/0.085mm
54-960-041-0	6	0.0047"/0.120mm	0.0014"/0.035mm	0.0023"/0.059mm	0.0049"/0.125mm
54-960-042-0	6	—	—	—	—
<b>A6</b>					
54-960-030-0	7	0.0012"/0.031mm	0.0003"/0.008mm	0.0008"/0.020mm	0.0013"/0.032mm
54-960-031-0	7	0.0016"/0.040mm	0.0005"/0.012mm	0.0010"/0.026mm	0.0017"/0.043mm
54-960-032-0	7	0.0020"/0.052mm	0.0006"/0.016mm	0.0013"/0.033mm	0.0023"/0.059mm
54-960-033-0	7	0.0027"/0.069mm	0.0012"/0.020mm	0.0017"/0.042mm	0.0031"/0.079mm
54-960-050-0	7	0.0036"/0.092mm	0.0010"/0.026mm	0.0021"/0.053mm	0.0043"/0.108mm
54-960-051-0	7	0.0053"/0.135mm	0.0015"/0.037mm	0.0029"/0.073mm	0.0059"/0.151mm
54-960-052-0	7	—	—	—	—

Part Number	Axes	$MPE_p^5$	$MPE_l^6$
<b>A3</b>			
54-960-001-0	6	0.0003"/0.008mm	0.005mm + $\sqrt{L}$ 50mm < 0.015mm
54-960-002-0	6	0.0003"/0.008mm	0.005mm + $\sqrt{L}$ 50mm < 0.018mm

1. Maximum permissible longitudinal error of measurement, bi-directional
2. Maximum permissible probe deviation, size
3. Maximum permissible probe deviation, shape

4. Maximum permissible probe deviation, position
5. Maximum permissible error, probing
6. Maximum permissible error, length measurement



# VISION SYSTEMS OPTICAL COMPARATORS

*Multi Sensor Solutions (Contact & Non-Contact)*

## VuMaster 2D Manual / 2D CNC - Vision System

VuMaster is a 2D vision system with a massive difference.

Due to its innovative absolute 2D scale system, expertly designed VuMaster does not have a conventional moving stage or encoders - just a floating measuring camera that moves anywhere in the measuring range. The result is fast, accurate, 'non contact' measurement over a much larger measuring range - 16"/400mm x 12"/300mm to be exact!

Because the camera moves and the part stays still, there is often no need for expensive and time consuming work holding devices.

VuMaster is either operated manually or inspection routines can be recorded and stored. When played back, these 'programs' guide the operator through a pre-defined inspection procedure recreating the same lighting conditions and using Video Edge Detection to automatically capture feature data.

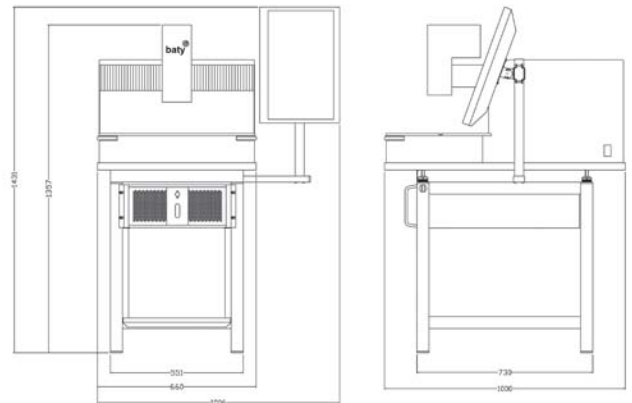
Finally, multiple reports can be generated automatically including SPC charts, Excel compatible tabulate and multiple component and fully dimensional drawing of measured part.



54-403-001-0

### Features:

- Large 15.7"/400mm x 11.8"/300mm measuring range
- Sturdy construction with a granite base
- Supplied with Fusion 2D vision software
- Colourmap measuring technology
- Programmable collimated profile lighting
- Teach and repeat part programming
- Advanced video edge detection
- Digital zoom
- Supplied with stand, rack mount PC and 22" monitor
- Programmable segmented LED surface ring light
- Motorized autofocus
- Image grab
- Auto inspection playback
- CNC and Manual models available
- Off line programming from DXF
- Scanning tool with DXF compare function for profile measurement
- Image stitching allows full part to be reviewed in the camera window



Part Number	Description
54-403-001-0	VuMaster Manual including 22" LCD monitor
54-403-005-0	VuMaster CNC including 22" LCD monitor
54-251-500-0	Glass calibration artifact (1 included)

## Venture Touch - Vision System

The highly successful Venture range includes both manual and full CNC systems that cover two standard measuring ranges.

### Venture Touch 3D

This advanced Vision system combines a manually operated X-Y measuring stage with a motorised Z axis. The advantage of this is that the servo motor driven Z axis can provide the all-important autofocus function for Z axis measurement without operator influence.

Suitable for the shop floor, the rugged design features a steel / granite stand with fully integrated PC controller running Baty's 3 axis touch screen software - Fusion Touch. The full HD touch screen is mounted on an adjustable arm and the software is arranged in a portrait layout for ease of use.

Fusion Touch software features full geometric functionality so circles, lines arcs and points can be measured using dedicated tools. Data points are automatically taken along the edge of the feature using video edge detection, then all measurements are automatically saved, should the inspection need to be replayed for a batch of parts.

All measured features appear in the part view where they can be selected for dimensioning resulting in a dimensioned part view that can be printed or exported to CAD. Tolerances are set for each dimension so that the final inspection reports can classify each dimension as a pass or fail.

### Inspection playback

During this process the operator is guided through the inspection routine via the graphical part view. Once the stage has been positioned so that the feature appears in the camera's view, the Video Edge Detection tools take over and measure the feature automatically. If features are on different planes, the Z axis drives under CNC control to the correct position as defined by the original inspection. All lighting and magnification conditions are also recorded and re-created as each feature is visited. The end result is a highly repeatable process with no operator influence, at a manual system price.

### Lighting

The programmable LED lighting is also controlled using the touch screen. Segmented surface illumination, through the lens and profile lighting conditions can be adjusted to ensure that the feature edge is perfectly illuminated.

### Features:

- High resolution 0.5 $\mu$ m scales for increased accuracy
- 6.5:1 zoom optics (with optional CNC control)
- Optional 12x zoom optics
- Programmable segmented LED lighting system
- Z axis dovetail slide mount for increased Z axis capacity
- High precision cross-roller stage
- Ultra-smooth plain rod drives
- Auto video edge detection tools
- Motorized autofocus for z-axis measurement



54-303-250-0

Part Number	Description
54-251-150-0	Venture Touch - 2510, Venture manual with motorized Z and autofocus, Fusion Touch software, 9.8"/250mm x 4.9"/125mm x 6.1"/155mm X,Y, Z measuring range
54-303-250-0	Venture Touch - 3030, Venture manual with motorized Z and autofocus, Fusion Touch software, 11.8"/300mm x 11.8"/300mm x 7.8"/200mm X,Y, Z measuring range
54-251-500-0	Glass calibration artifact (1 included)
54-251-550-0	All steel machine stand with granite top (not included)



## Venture XT CNC - Vision System

Venture XT CNC models take the power of Fusion software one stage further by completely automating the inspection process. Using a combination of non-contact (camera) and contact (touch probe) methods, advanced measurements including scanning and best fitting can be completed in a single automated inspection, without taking up the time of skilled operators.

CNC programming is a simple teach and repeat process. Just measure the part once and a full CNC program is created automatically. The zoom lens can also be controlled so that magnification changes are all recorded into the program. CNC programs can also be created offline from CAD models.

### Large Measurement Volume

The use of a touch probe is optimized on a CNC system. Measurements from data points taken using the touch probe can be combined with those taken using Video Edge Detection for optimum speed and reduced inspection times. This provides a truly universal measuring instrument combining the capabilities of a CMM, optical comparator, microscope and visual inspection in one compact instrument.

A probe changer rack can be installed so that the probe modules fitted with a variety of pre-calibrated styli can also be used in the same inspection. When a change of stylus is required, the system automatically puts the current probe module back in the rack and picks up the next to continue the inspection process.

Programming using the touch probe is easy, simply probe each element of the part using the minimum of points to create a program template. This process can be done at the machine using the actual part, or off-line using a CAD model. Measurements made using the camera are also automatically added to the current inspection program. Unique conditions are saved with each measurement so each element is measured in exactly the same way (lighting, edge detection settings etc.) for every part in a batch.



54-242-000-0

### Features:

- Teach and repeat programming
- Programmable segmented LED lighting
- 6.5:1 zoom optics (with optional CNC control)
- Zoom lens error mapping for increased accuracy in the field of view
- Optional 12x zoom optics
- High resolution 0.5µm scales for increased accuracy
- CAD import/export
- Scanning and best fitting - contact and non-contact
- Fully dimensioned part view
- SPC included
- Excel™ compatible reports
- Autofocus
- 6.3"/160mm or 7.8"/200mm Z axis measuring range on adjustable dovetail slide
- 9.8"/250mm x 4.9"/125mm and 11.8"/300mm x 11.8"/300mm XY stages available
- 2D and 3D program from CAD
- Image stitching allows full part to be reviewed in the camera window

Part Number	Description
54-251-200-0	Venture XT 2510 - CNC, Venture XT CNC with Fusion 3D software, 9.8"/250mm x 4.9"/125mm x 6.1"/155mm XYZ stage, includes controller and 2, 19" monitors
54-251-205-0	Venture XT 2510 - CNC, Venture XT CNC with Fusion 3D software, 9.8"/250mm x 4.9"/125mm x 6.1"/155mm XYZ stage, includes controller and 2, 19" monitors, TP20 touch probe and CNC zoom lens
54-303-300-0	Venture XT 3030 - CNC, Venture XT CNC with Fusion 3D software, 11.8"/300mm x 11.8"/300mm x 7.9"/200mm XYZ stage, includes controller and 2, 19" monitors
54-242-000-0	Venture XT 3030 - CNC, Venture XT CNC with Fusion 3D software, 11.8"/300mm x 11.8"/300mm x 7.9"/200mm XYZ stage, includes controller and 2, 19" monitors, TP20 touch probe kit and CNC zoom lens
54-242-500-0	Venture XT 3030 - CNC, Venture XT CNC with Fusion 3D software, 11.8"/300mm x 11.8"/300mm x 7.9"/200mm XYZ stage, includes controller and 2, 19" monitors, SP25 touch probe kit and CNC zoom lens
54-251-500-0	Glass calibration artifact (1 included)

**Standard lighting options included on all Venture Systems**

- Programmable segmented 64 LED surface light ring
- Collimated profile light
- Coaxial (TTL) light

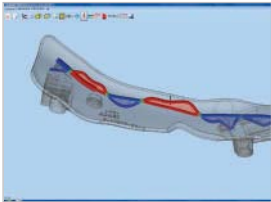


*Fowler Baty's Programmable segmented LED lighting*

**Venture Options**

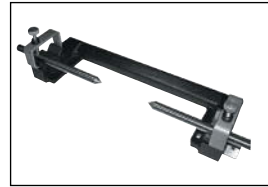
**CAD Comparison**

3D CAD models (STEP or IGES format) can be imported and displayed in a floating window. Following a simple part coordinate alignment to the CAD model, data points can be taken anywhere on the part surface using either touch probe or Vision. These data points are then displayed on the CAD model and classified according to their distance from the nominal surface for 3D profile analysis.



**54-950-106-0**

Touch probe inspection programs can be created before the part is even manufactured by using the CAD model to define the features to be measured. The CNC program template is then created with all the necessary XYZ moves calculated. This facility can also be used for offline programming on a remote PC.



**54-303-196-0**

Cast vee blocks and extended centres for the 2510 and 3030 Venture models



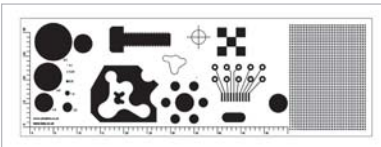
**54-303-016-3**

Probe module change rack, 6 port



**54-250-550-0**

Rigid steel stand with granite top and integral PC/controller shelf for Venture 2510 and 3030 models



**54-251-500-0**

Included with every Venture is this calibration standard with nominal diameters for field of view measurement verification and pixel calibration



**54-303-200-0**

Universal fixture base provides fixture mounting slots compatible with all projector accessories

Part Number	Description
54-950-106-0	CAD comparison software
54-950-107-0	Program from CAD software
54-303-016-3	Probe module change rack - 6 port
54-303-196-0	Dual vee block and centers
54-303-200-0	Universal fixture base
54-251-500-0	Glass calibration artifact
54-251-550-0	All steel machine stand with granite top

## Venture PLUS - Vision System

The Venture Plus range includes all of the standard Venture features with a little more... measuring range.

The bridge type construction is all aluminium resulting in low inertia and low thermal mass. Air bearings are used on all axes and a granite Y beam is used for increased accuracy. This ensures that the machine will expand and contract uniformly with temperature changes ensuring minimal distortion and subsequent errors. Ambient temperature can be compensated for within the Fusion software making the Venture PLUS ideal for use on the shop floor.

Complete with our standard zoom optics and programmable, segmented LED surface lighting, Venture PLUS offers the same level of camera based functionality as every other Venture.

Programming using the touch probe is easy, Simply probe each element of the part using the minimum of points to create a program template. This process can be done at the machine using the actual part, or off-line using a CAD model. Measurements made using the camera are also automatically added to the current inspection program. Unique conditions are saved with each measurement so each element is measured in exactly the same way (lighting, edge detection settings etc.) for every part in a batch.

A probe changer rack can be installed so that multiple probe modules fitted with a variety of pre-calibrated styli can all be used in the same inspection. When a change of stylus is required, the system automatically puts the current probe module back in the rack and picks up the next to continue the inspection process. Only now can this functionality be combined with traditional touch probe technology to offer the ultimate in large format multi-sensing Vision systems - Venture PLUS.



54-303-646-0

### Features:

- Teach and repeat programming
- Programmable segmented LED lighting
- 6.5:1 zoom optics (with optional CNC control)
- Zoom lens error mapping for increased accuracy in the field of view
- Optional 12x zoom optics
- High resolution 0.5µm scales for increased accuracy
- CAD import/export
- Scanning and best fitting - contact and non-contact
- Fully dimensioned part view
- SPC included
- Excel™ compatible reports
- Autofocus
- 6.3"/160mm or 7.8"/200mm Z axis measuring range on adjustable dovetail slide
- 9.8"/250mm x 4.9"/125mm and 11.8"/300mm x 11.8"/300mm XY stages available
- 2D and 3D program from CAD
- Image stitching allows full part to be reviewed in the camera window
- Multi-function joystick with colour touch screen

### Venture PLUS Additional Features:

- Rigid, low mass bridge construction
- Integral 6.5:1 zoom optics
- Includes PC controller
- CNC controlled collimated profile lighting
- 250/400mm Z axis measuring range
- Optional automatic temperature compensation
- Optional multi function joystick with colour touch screen display

### Options Include:

- 12:1 zoom optics
- Renishaw SP25 scanning probe

Part Number	Description - Measurement Volume
54-303-646-0	Venture Plus - 25.2"/640mm x 11.2"/600mm x 9.8"/250mm
54-303-649-0	Venture Plus - 25.2"/640mm x 35.4"/900mm x 9.8"/250mm
54-303-110-0	Venture Plus - 39.4"/1000mm x 39.4"/1000mm x 15.7"/400mm
54-303-150-0	Venture Plus - 39.4"/1000mm x 59"/1500mm x 15.7"/400mm

## CNC Systems

CNC Systems - Technical Specifications					
	54-403-005-0 VuMaster	54-251-200-0 Venture	54-303-300-0 Venture XT	54-303-646-0 Venture PLUS	54-303-649-0 Venture PLUS
<b>X Y Z Measuring Range</b>	400 x 300mm	250 x 125 x 155mm	300 x 300 x 200mm	640 x 600 x 250mm	640 x 900 x 250mm
<b>Workstage Area</b>	420 x 320mm	414 x 262mm	464 x 462mm	700 x 940mm	700 x 1240mm
<b>Max Workpiece Load</b>	55 lbs. / 25 kg.	55 lbs. / 25 kg.	55 lbs. / 25 kg.	165 lbs. / 75 kg.	165 lbs. / 75 kg.
<b>Drive Type</b>	CNC / Handwheel	CNC / Joystick	CNC / Joystick	CNC / Joystick	CNC / Joystick
<b>Bearings</b>	Air Bearings	Cross Roller Rail Guide	Cross Roller Rail Guide	Air Bearings	Air Bearings
<b>Max Drive Speed</b>	100mm / sec	200mm / sec	200mm / sec	350mm / sec	350mm / sec
<b>Camera Type</b>	2048 x 1590 pixel color USB2 camera with 8 x 9mm chip and dynamic latch				
<b>Optics/Lighting</b>	Fixed objective telecentric lens w/programmable LED lighting	6.5:1 CNC zoom lens. Fully programmable software controlled white LED segmented surface lighting head with understage and through the lens (TTL) lighting as standard			
<b>Optional</b>		12:1 CNC Zoom lens option for increased FOV	12:1 CNC Zoom lens option for increased FOV	12:1 CNC Zoom lens option for increased FOV	12:1 CNC Zoom lens option for increased FOV
<b>Resolution</b>	0.001mm	0.0005mm	0.0005mm	0.0005mm	0.0005mm
<b>Accuracy</b> <i>(L = measured length in mm)</i>	7.5 μm	2 + L/100	(2 + L/100)μm	(2.4 + 0.4 L/100)μm Volmetric	(2.4 + 0.4 L/100)μm Volmetric
<b>Max Field Of View (FOV)</b>	12mm	16mm*	16mm*	16mm*	16mm*
<b>Magnification</b>			20x 350x		
<b>Touch Probe Option Available</b>	NO	YES	YES	YES	YES
<b>Probe Type</b>	N/A	Renishaw TP20	Renishaw TP20	Renishaw TP20	Renishaw TP20
<b>Optional</b>	N/A	Renishaw SP25 Scanning Probe	Renishaw SP25 Scanning Probe	Renishaw SP25 Scanning Probe	Renishaw SP25 Scanning Probe
<b>Change Rack Compatible?</b> <i>*using optional 0.5x adapter lens</i>	N/A		YES	YES	YES

## Manual Systems

Manual Systems - Technical Specifications			
	54-403-001-0 VuMaster	54-251-150-0 Venture	54-303-250-0 Venture XT
<b>X Y Z Measuring Range</b>	400 x 300mm	250 x 125 x 160mm	300 x 300 x 200mm
<b>Workstage Area</b>	420 x 320mm	414 x 262mm	464 x 462mm
<b>Max Workpiece Load</b>	55 lbs. / 25 kg.	55 lbs. / 25 kg.	55 lbs. / 25 kg.
<b>Drive Type</b>	Manual	Manual	Manual
<b>Bearings</b>	Air Bearings	Cross Roller Rail Guide	Cross Roller Rail Guide
<b>Camera Type</b>	2048 x 1590 pixel color USB2 camera with 8 x 9mm chip and dynamic latch		
<b>Optics/Lighting</b>	Fixed objective telecentric lens w/programmable LED lighting	6.5:1 CNC zoom lens. Fully programmable software controlled white LED segmented surface lighting head with understage and through the lens (TTL) lighting as standard	
<b>Resolution</b>	0.001mm	0.0005mm	0.0005m
<b>Accuracy</b> <i>(L = measured length in mm)</i>	7.5 μm	(2 + L/100)μm	(2 + L/100)μm
<b>Max Field Of View (FOV)</b>	12mm	16mm*	16mm*
<b>Magnification</b>	20x 350x	Optical zoom ratio 27x - 175x on 17" monitor w/digital zoom enhancement to over 1200x	
<b>Touch Probe Option Available</b>	NO	NO	NO
<b>Probe Type</b>	N/A	N/A	N/A
<b>Change Rack Compatible</b>	N/A	N/A	N/A

## R14 - Optical Comparator

The Fowler Baty R14 bench mount optical comparator with its 340mm screen combines high accuracy non-contact measurement and inspection with a large 175mm x 100mm measuring range.

Choice of digital readouts and optional automatic profile edge detection ensures that you can have the comparator that fits your requirements. The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Fowler Baty fixture family. The compact and robust lightweight chassis makes the R14 ideal for workshop environments.

### Features

- 14"/340mm screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source  $\pm 7^\circ$  for accurate thread form projection
- Workstage with machined slot for holding accessories
- Workstage measuring range of 7"/175mm x 4"/100mm
- Digital angle measurement to 1 minute
- 0.5 micron resolution

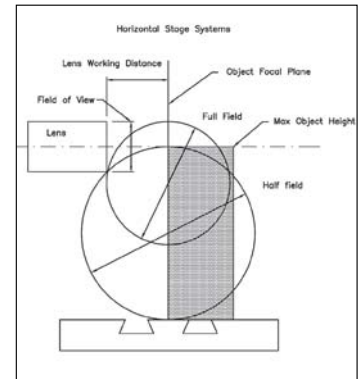
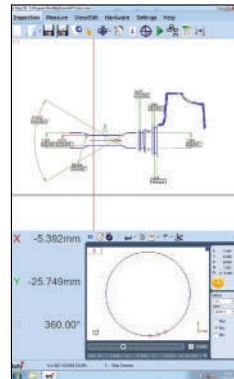
### Available Options

- Internally fitted automatic edge sensor
- Swing over lamphouse to allow clear access to the workstage
- Various display units are available to suit individual requirements
- Cabinet stand ensures a solid base and provides storage



54-900-810-0

Projector Type	R14				
Magnification	10x	20x	25x	50x	100x
Field of view	35	18	14	7	4
Working Distance	82	38	24	15	31
Maximum Working Diameter	half field 103	103	80	45	96
	full field 120	109	56	31	77



Part Number	Description	Functions
53-900-800-5	R14 - XLS Horizontal Optical Comparator w/Acu-rite DC 102 Readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-800-1	R14 - GXL Horizontal Optical Comparator w/ Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-800-5 with added geometric functions and tolerancing
53-900-801-1	R14 - GXL - E Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-800-1 with added optical edge sensor
53-900-810-0	R14 - FT2 - E Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor
Lens Systems		
53-900-860-0	Lens system - magnification 10x	
53-900-861-0	Lens system - magnification 20x	
53-900-862-0	Lens system - magnification 25x	
53-900-863-0	Lens system - magnification 50x	
53-900-864-0	Lens system - magnification 100x	

\*Lens Systems must be ordered separately



## R400 - Optical Comparator

The Fowler Baty R400 bench mount optical comparator with its 400mm screen combines high accuracy non-contact measurement and inspection with a large 300mm x 150mm measuring range.

Choice of digital readouts and optional automatic profile edge detection ensures that you can have the projector that fits your requirements. The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Fowler Baty fixture family. The robust design of the R400 makes it suitable for both the shop floor and the standards room.

### Features

- 16"/400mm screen with 90° crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source for accurate thread form projection
- Workstage with two machined slots for holding accessories
- Workstage measuring range of 300mm (12") x 150mm (6")
- Digital angle measurement to 1 minute
- 0.5 micron resolution

### Available Options

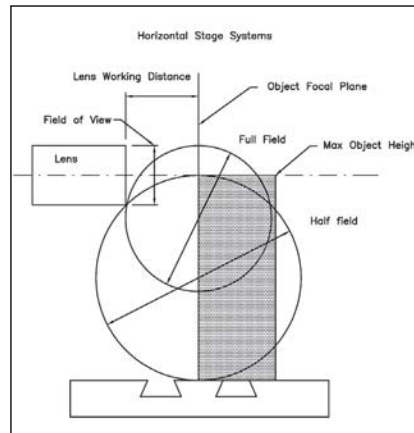
- Internally fitted automatic edge sensor (FT2-E model only)
- Swing over lamphouse to allow clear access to the workstage
- Various display units to suit individual requirements
- Cabinet stand ensures a solid base and provides storage
- Other options include foot switch control



53-900-900-0

Projector Type	R400				
Magnification	10x	20x	25x	50x	100x
Field of view	40	20	16	8	4
Working Distance	80	82	70	53	43
Maximum	184	185	185	185	143
Working Diameter	179	176	181	147	122

all dimensions in mm



Part Number	Description	Functions
53-900-905-0	R400 - XLS Horizontal Optical Comparator w/Acu-rite DC 102 Readout - 16" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-910-1	R400 - GXL Horizontal Optical Comparator w/ Heidenhain touch screen readout - 16" screen	Same functions as the 53-900-905-0 with added geometric functions and tolerancing
53-900-915-1	R400 - GXL - E Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 16" screen	Same functions as 53-900-910-1 with added optical edge sensor
53-900-900-0	R400 - FT2 - E Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 16" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor
Lens Systems		
53-900-987-0	Lens system - magnification 10x	
53-900-888-0	Lens system - magnification 20x	
53-900-889-0	Lens system - magnification 25x	
53-900-890-0	Lens system - magnification 50x	
53-900-891-0	Lens system - magnification 100x	

\*Lens Systems must be ordered separately

## R600 - Optical Comparator

The Fowler Baty R600 with its 24"/600mm screen and high specification presents the capability to make simple comparative non-contact measurement through to complex programmed measuring sequences with SPC capability and automatic edge detection. The horizontal light beam configuration is ideally suited to large machined or turned workpieces for mounting in vee blocks and centres.



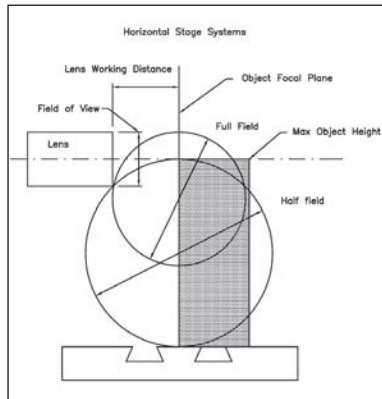
53-900-950-0

### Features:

- 24"/600mm screen with 90° cross lines and chart clips
- Heavy duty workstage with 18"/450mm x 8"/200mm measuring range and 2 machine slots for workpiece holders
- Angular rotation of  $\pm 15^\circ$  on workstage for measuring threadforms or cutting tools
- Vertical 8"/200mm Y axis power driven with joystick control
- Lens magnification choice - 5x (single lens mount), 10x, 20x, 25x, 50x, 100x
- 4 position rotating lens turret for ease of lens changing (excluding 5x)
- Profile illumination with halogen lamp and green filter
- Screen hood and curtains for use in bright ambient light conditions
- Surface illumination (fibre optic)
- Digital angle measurement
- 0.5 micron resolution

### Available Options

- Horizontal axis motorization via joystick control
- Internally fitted automatic edge sensor to allow the use of overlay charts on an unobstructed screen
- Various display units are available to suit individual requirements
- SPC to add to your quality control without the purchase of a separate system (FT2-E only)
- 5x lens system as a single lens mount only



Projector Type	R600					
Magnification	5x	10x	20x	25x	50x	100x
Field of view	120 (4.72)	60 (2.36)	30 (1.18)	24 (.94)	12 (.47)	6 (1.72)
Working Distance	245 (9.64)	135 (5.31)	132 (5.19)	106 (4.17)	93 (3.15)	50 (1.96)
Maximum	292 (9.64)	343 (13.50)	343 (13.50)	343 (13.50)	343 (13.50)	195 (7.75)
Working Diameter	406 (18.98)	343 (13.50)	343 (13.50)	343 (13.50)	343 (13.50)	235 (9.25)

all dimensions in mm / (inches)

Part Number	Description	Functions
53-900-960-5	R600 - XLS Horizontal Optical Comparator w/Acu-rite DC 102 Readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-960-0	R600 - GXL Horizontal Optical Comparator w/ Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-960-5 with added geometric functions and tolerancing
53-900-965-1	R600 - GXL - E Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-960-0 with added optical edge sensor
53-900-950-0	R600 - FT2 - E Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor
Lens Systems		
53-900-185-1	Lens system - magnification 10x	
53-900-185-2	Lens system - magnification 20x	
53-900-185-3	Lens system - magnification 25x	
53-900-185-4	Lens system - magnification 50x	
53-900-185-5	Lens system - magnification 100x	

\*Lens Systems must be ordered separately

## SM300 - Optical Comparator

12"/300mm screen vertical light path comparator with multi-function readout unit and printer.  
Robust design with full geometric measuring functionality ideal for the shop floor.

### Features:

- Top quality profile projector highly versatile and easy to operate
- Large travel range 150mm x 50mm (6"x 2") as standard
- Linear scale stage with 0.0005mm resolution
- Fine ground glass screen for clear image with cross hairs
- Screen complete with cross hair lines and chart clips
- Built-in profile and surface illumination
- 10x, 20x, 50x, 100x projection lenses available
- Display-readout unit GMR included in standard delivery

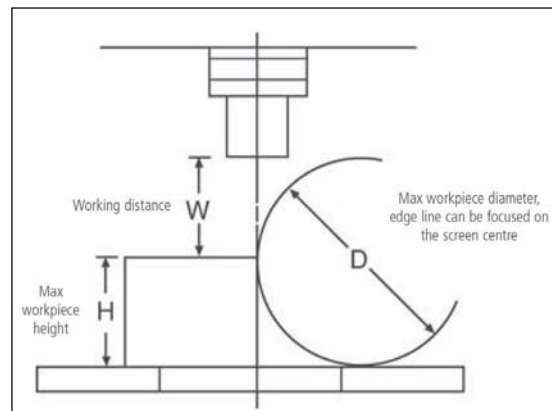
### Available Options

- Projection lens 10x with half reflecting mirror
- Projection lens 20x with half reflecting mirror
- Projection lens 50x with half reflecting mirror
- Projection lens 100x with half reflecting mirror
- Rotary table 360°
- Swivel centre support
- Holder with clamp
- V-block with clamp

	Projection capacity (unit mm)			
Magnification	10x	20x	50x	100x
View field diameter	30	15	6	3
Working distance W	77.7	44.3	24.5	25.3
Max workpiece height H	80	80	80	80
Max workpiece diameter, edge line can be focused on screen centre D	160	130	55	60



53-900-300-0



Part Number	Description
53-900-300-0	SM300 - GMR Vertical Optical Comparator w/geometric readout
Lens Systems	
53-900-300-1	Lens system - magnification 10x
53-900-300-2	Lens system - magnification 20x
53-900-300-3	Lens system - magnification 50x
53-900-300-4	Lens system - magnification 100x

\*Lens Systems must be ordered separately

## SM350 - Optical Comparator

This vertical 14"/350mm bench optical comparator features a large, heavy duty high precision workstage with 250mm x 125mm measuring range and 0.5 micron resolution. Another feature is the option of a three lens turret for instant lens changes without re-calibration.

### Features:

- Fully usable 350mm screen
- Digital screen protractor
- Built in helix adjustment
- Sturdy all-steel design
- Heavy duty cross roller bearings
- Quick release 'X' and 'Y' travel
- Easy-view vertical screen
- Large stage travel 250mm (10") x 125mm (5")
- Rotating chart clips
- Fiber optic illumination for surface measurement
- 0.5 micron resolution

### Available Options

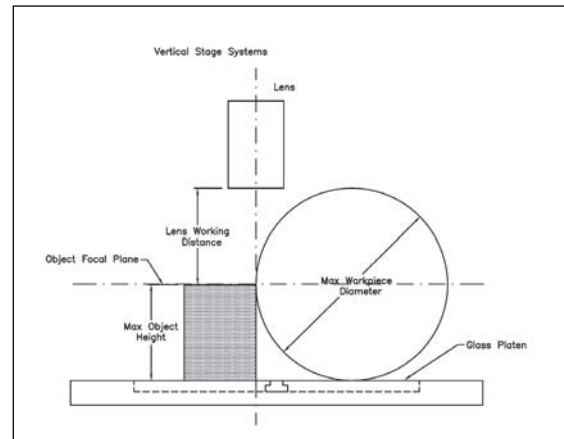
- Automatic screen-mounted edge sensing (FT2-E model only)
- Heavy duty cabinet stand
- 3-position rotating lens turret



53-900-354-0

Projector Type	SM350				
Magnification	10x	20x	25x	50x	100x
Field of view	35	17	14	7	3
Working Distance	84	37	29	17	41
Maximum half field	220	162	52	51	140
Working Diameter full field	171	130	75	37	97
Maximum Height Object	114	113	106	111	103

all dimensions in mm



Part Number	Description	Functions
53-900-350-0	SM350 - XLS Vertical Optical Comparator w/Acu-rite DC 102 Readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-351-0	SM350 - GXL Vertical Optical Comparator w/ Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-350-0 with added geometric functions and tolerancing
53-900-352-0	SM350 - GXL - E Vertical Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-351-0 with added optical edge sensor
53-900-354-0	SM350 - FT2 - E Vertical Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor
Lens Systems		
53-900-860-0	Lens system - magnification 10x	
53-900-860-1	Lens system - magnification 20x	
53-900-862-0	Lens system - magnification 25x	
53-900-863-0	Lens system - magnification 50x	
53-900-864-0	Lens system - magnification 100x	

\*Lens Systems must be ordered separately



## SM20 - Optical Comparator

The Fowler Baty SM20 is a vertical light path floor standing optical comparator with a 20"/500mm which features a large heavy duty high precision workstage with 250mm x 125mm measuring range and a 0.5 micron resolution.

### Features:

- 20"/500mm screen with 90 degree crosslines and chart clips
- Angled screen for easy viewing
- Profile illumination with halogen lamp and green filter
- Surface illumination through twin fibre optics for bright full colour surface inspection
- Single lens mounting
- Lens magnification choice: 5x, 10x, 20x, 25x, 50x and 100
- Helix adjustment of light source for accurate thread form projection
- Large stage travel 250mm (10") x 125mm (5")
- Large stage travel 10" (250mm) x 5"(125mm)
- Digital angle measurement
- 0.5 micron resolution

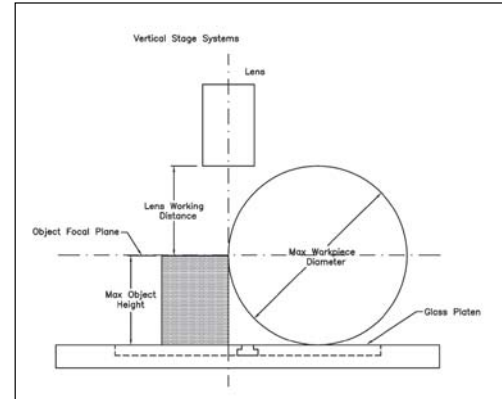
### Available Options

- Screen hood and curtains with generous proportions for use in bright ambient light conditions
- Automatic edge sensor
- 3 position lens turret for easy lens changing
- SPC to add to your quality control without the purchase of a separate system (FT2-E only)



53-900-320-4

Projector Type	SM20					
Magnification	10x	20x	25x	25x	50x	100x
Condenser	L	L	L	S	S	S
Field of view	50	25	20	20	10	5
Max diameter	200	200	200	200	180	85
Max focal pane height (profile lighting)	205	203	218	254	240	195
Max end mill height (surface lighting)	150	153	153	153	150	150



Part Number	Description	Functions
53-900-320-0	SM20 - XLS Vertical Optical Comparator w/Acu-rite DC 102 Readout - 20" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-320-1	SM20 - GXL Vertical Optical Comparator w/ Heidenhain touch screen readout - 20" screen	Same functions as the 53-900-320-0 with added geometric functions and tolerancing
53-900-320-2	SM20 - GXL - E Vertical Optical Comparator w/DRO as GXL with added optical edge sensor - 20" screen	Same functions as 53-900-320-1 with added optical edge sensor
53-900-320-4	SM20 - FT2 - E Vertical Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 20" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor
Lens Systems		
53-900-185-1	Lens system - magnification 10x	
53-900-185-2	Lens system - magnification 20x	
53-900-185-3	Lens system - magnification 25x	
53-900-185-4	Lens system - magnification 50x	
53-900-185-5	Lens system - magnification 100x	

\*Lens Systems must be ordered separately



## Readout Options - Optical Comparator

The readout options from Baty include a fully programmable unit with geometrical functions and a software module allowing direct connection to a PC. All units are fully compatible with our full range of profile projectors, allowing for upgrades as required.



### XLS Readout

The new Acu-rite DRO-100 Series LCD display unit. A simple two axis digital readout for point to point X,Y or R,A measurements with absolute/incremental readings. Functions also include a zero reset, an instant inch/mm conversion and an instant radius/diameter conversion.

**Part Number: 53-900-501-0**



### GXL-E

- Optical edge sensor included
- Graphical display of measured feature
- Radius, angle, line, point, skew
- Inch, metric, polar, cart
- Data output to PC/printer
- Store inspection routines to prompt operator
- Tolerancing
- Multi-language menu
- On-screen help

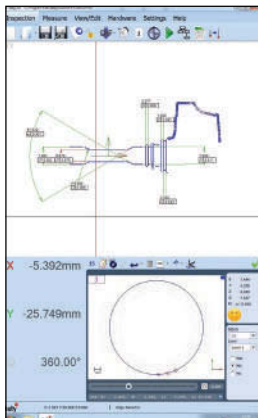
**Part Number: 53-900-506-0**



### GXL

- Graphical display of measured feature
- Radius, angle, line, point, skew
- Inch, metric, polar, cart
- Data output to PC/printer
- Store inspection routines to prompt operator
- Tolerancing
- Multi-language menu
- On-screen help

**Part Number: 53-900-507-0**



**FT2-E:** Complete TOUCH SCREEN DRO with 2D Fusion Touch software as above. Built-in optical edge detection allows data points to be taken 'on the fly' as the projected image is passed under the screen-mounted fibre optic sensor. An internally mounted edge sensor is available as an option on all 'R' series projectors.

**Part Number: 53-900-514-0**

## Accessories - Optical Comparator



### R14 / R400 Accessories

Part Number	Description
202-1327-1	Footswitch for GXL
ABFS001	Footswitch for FT2 DRO
53-900-003-0	Protective cover - R14
53-900-035-0	Protective cover - R400/SM350
53-900-828-0	Cabinet stand
53-900-250-0	Iris diaphragm
53-900-256-0	Vee blocks
53-900-258-0	Spring loaded centres
54-242-607-0	Riser blocks 38mm (1-1/2") for SA-256
53-900-825-0	Vice stage and vice
53-900-260-0	Swivel vice
53-900-276-0	Single vee and clamp (Vee parallel to optic axis)
53-900-153-0	Fixture base
53-900-527-0	Glass plate work holder
53-900-413-0	Optical edge sensor - R400 FT2-E

### Fixture Family Accessories

Part Number	Description
53-900-822-0	Self centering vice
53-900-823-0	Dual axis vee block and clamp to Ø 15mm
53-900-824-0	Dual axis vee block and clamp to Ø 30mm
53-900-826-0	Precision rotary base
53-900-827-0	Universal base
53-900-829-0	Precision ground steel alignment feature
53-900-829-0	Dual axis vee block fitted with side base

### R600 Accessories

Part Number	Description
53-900-551-0	Iris diaphragm for SM350/R600
53-900-542-0	Large vee blocks and centres
53-900-543-0	Riser blocks
SA-614	Large vice stage and vice
53-900-527-0	Glass plate work holder
SA-617	Heavy duty rotating vice
SA-733	Swing over lamphouse
53-900-606-0	Screen chart rest bar

### SM350/SM20 Accessories

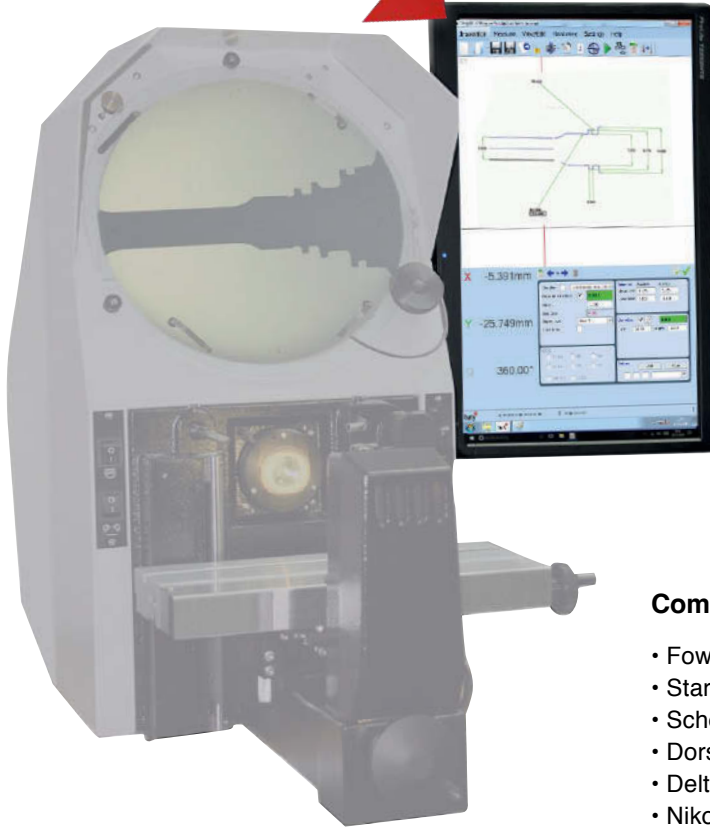
Part Number	Description
54-242-606-0	Rotary glass stage
54-242-608-0	Back stop
54-242-609-0	Side stop
54-303-196-0	Dual vee block and centres
54-303-251-0	open frame fixturing for 2510 stage
53-900-551-0	Iris diaphragm for SM350/R600
53-900-035-0	Protective cover - R400/SM350

## Optical Comparator Retrofit Packages

# Retrofit!

With our retrofit program you can dramatically enhance the functionality of your current optical comparator.

Advanced error mapping - increase accuracy of you comparator.  
Comprehensive reporting including dimensioned drawing, SPC and EXCEL™ compatible first article inspection reports.



### Compatible comparator types:

- Fowler Baty/Gagemaster
- Starrett
- Scherr-Tumico
- Dorsey Gage
- Deltronic
- Nikon
- Mitutoyo
- Tesa
- Messtechnik ... and much more!

Part Number	Description
53-900-872-0	FT2-E Optical Comparator Retrofit for NIKON V-12B
53-900-873-0	FT2-E Optical Comparator Retrofit for Heidenhain Scales
53-900-874-0	FT2-E Optical Comparator Retrofit for Acu-rite Scales
53-900-875-0	FT2-E Optical Comparator Retrofit for Deva Connections
53-900-876-0	FT2-E Optical Comparator Retrofit for Mitutoyo Scales
53-900-877-0	FT2-E Optical Comparator Retrofit for Deltronic Scales
53-900-878-0	FT2-E Optical Comparator Retrofit for Accurite D9 Scales



# HORIZONTAL MEASURING

*For calibration and setting*



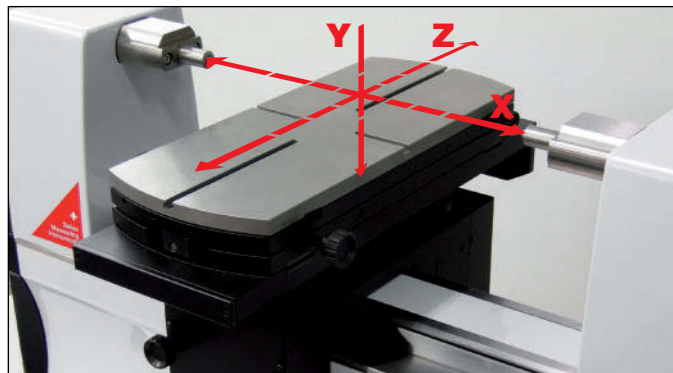
## Labconcept Nano Calibration System

The Labconcept Nano is a new reference in the field of dimensional metrology. It integrates almost 40 years of knowledge and continuous improvement. It is a remarkable instrument for all measuring tasks that require extremely high accuracy.



The uncompromising design of the Labconcept Nano offers an ideal and performing platform for checking and calibration of all kinds of gages and measuring instruments. Checking of internal and external dimensions will be done as a fully automatic procedure by the three motorized axis XYZ and the legendary simplicity of use of the Trimos® WinDHI software.

The Labconcept Nano is completely designed and manufactured in Switzerland according to the highest quality standards.



### Features:

- Unequaled high level of accuracy
- Exceptional repeatability
- Test Equipment Management System QMSOFT allows the inspection and management of gage data included standard.
- Trimos® WinDHI Software allows the user to perform all measuring functions through a user-friendly interface included standard.
- Motorized measuring carriage, X axis, selection of speed by software included standard.
- Motorized universal measuring table, CNC Y and Z axis with integrated measuring system.
- Measuring force (0-12N) and locking of measuring anvil performed by software.
- Integrated temperature compensation system included standard.
- Absolute measuring range on all models 350 mm.
- Application ranges of 350, 600 and 1100 mm.
- Measuring of parts up to 60 kg in weight.
- Bench with computer and two touch screens included standard.
- Optional pneumatic vibration bench.





## Labconcept Nano Calibration System

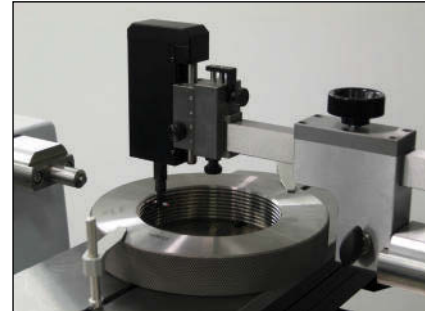
### Applications



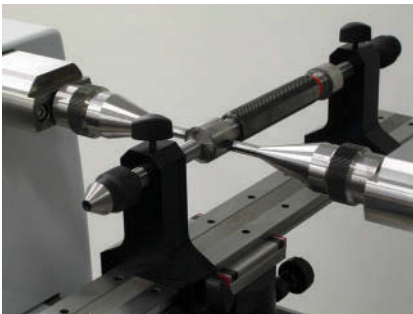
Checking of large plain ring gages



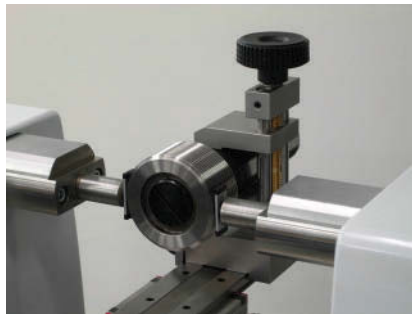
Checking of small plain ring gages from Ø 2 mm as standard



Checking of thread ring gages from M3 as standard



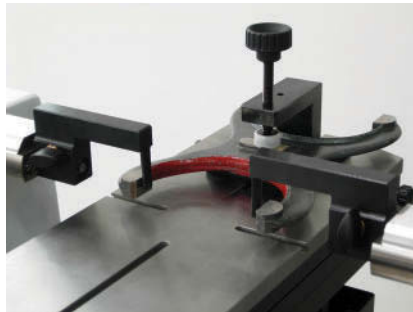
Checking of plain plug gages



Checking of thread plug gages



Checking of master gage blocks



Checking of snap gages



Checking of taper thread plug gages



Checking of taper thread ring gages

Part Number	54-197-400-0	54-197-405-0	54-197-410-0
Absolute measuring range <sup>1)</sup>	14"/350mm	14"/350mm	14"/350mm
Application range	0-14"/350mm	0-24"/600mm	0-44"/1100mm
Max permissible errors <sup>2)</sup>	0.07+L(mm)/2000 µm		
Max resolution	0.0000001"/0.000001mm		
Repeatability (2s) <sup>2)</sup>	0.03 µm		
Measuring force (adjustable by software)	0-12 N		
Operational temperature	+15° to 35° C		
Storing temperature	-10° to 50° C		
Relative humidity	20 .. 80 %		
Weight	350 kg./770 lbs.	420 kg./924 lbs.	500 kg./1100 lbs.

1) May vary according to accessory used.

2) Values valid at a temperature of 20 ± 0.2°C and relative humidity of 50 ± 5%

Measuring Table with Motorized Y and Z Axis	
Z axis, displacement range <sup>3)</sup>	100mm
Y axis, displacement range <sup>3)</sup>	50mm
X axis floating movement	± 10mm
Angle of rotation φ Y	± 1.5°
Angle of inclination φ Z	± 4°
Max. weight of parts	60 kg.

3) Both axes have an integrated measuring system.

## Labconcept Premium

### Universal Length Measuring Instrument

The Fowler/Trimos LABCONCEPT Premium Universal Length Measurement System combines the ultimate in accuracy, performance, range and simplicity in an easy to use, robust instrument.

It can calibrate all types of standards including plug gages, ring gages, thread plug gages, thread ring gages, snap gages, depth gages, dial indicators and more. A large variety of accessory supports and probes allow unmatched versatility in checking both internal and external dimensions.



54-197-300-0

#### Features:

- Measuring range 0 - 12"/300mm, 0 - 20"/500mm, 0 - 40"/1000mm
- Developed for ISO 9000/2000 standards
- Switchable Resolution; 0.0001", 0.00001", 0.000001", or 0.001mm, 0.0001", 0.00001mm
- Wide range of easily interchangeable accessories
- Adjustable measuring force 0 - 12N
- Displacement speed of measuring carriage = 60"/sec(1.5m/sec)
- Fine adjustment range = 0.394"/10mm
- Operational temperature limit 10° - 40°C
- Operational humidity limit 30 - 80%



**QMSOFT software (page 77) is the perfect calibration and data management tool for use with this product!**

#### Technical Specifications

Part Number	54-197-300-0	54-197-320-0	54-197-340-0
Measuring Range	0 - 14"/370mm	0 - 21"/550mm	0 - 41"/1050mm
Accuracy	0.1µm + (L(mm)/2000)µm	0.15µm + (L(mm)/2000)µm	
Repeatability		0.00002"/0.05µm	
Display	Computer added screen display: PC w/flat screen monitor, DDE server and Trimos WIN DHI software for display of functions and measuring results		
Resolution, switchable	0.0001", 0.00001", 0.000001" or 0.001mm, 0.0001mm, 0.00001mm		

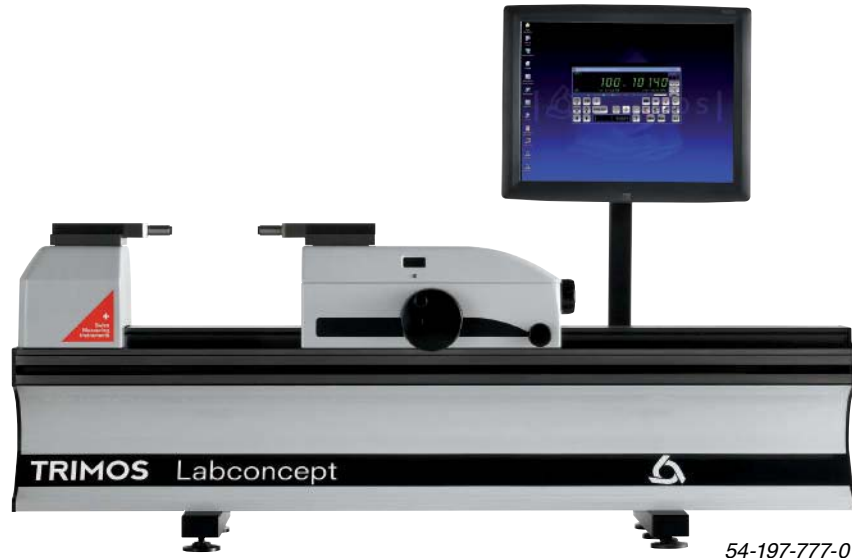
Part Number	Description
54-197-300-0	0 - 14"/370mm Labconcept Premium
54-197-320-0	0 - 21"/550mm Labconcept Premium
54-197-340-0	0 - 41"/1050mm Labconcept Premium

## Labconcept

### Universal Length Measuring Instrument

The Fowler/Trimos LABCONCEPT Universal Length Measurement System combines the ultimate in accuracy, performance, range and simplicity in an easy to use, robust instrument.

It can calibrate all types of standards including plug gages, ring gages, thread plug gages, thread ring gages, snap gages, depth gages, dial indicators and more. A large variety of accessory supports and probes allow unmatched versatility in checking both internal and external dimensions.



54-197-777-0

#### Features:

- Large measuring range 0 - 20"/500mm and 0 - 39.4"/1000mm
- Developed for ISO 9000/2000 standards
- Switchable Resolution; 0.0001", 0.00001", 0.000001", or 0.001mm, 0.0001", 0.00001mm
- Wide range of easily interchangeable accessories
- Adjustable measuring force 0 - 12N
- Displacement speed of measuring carriage = 60"/sec(1.5m/sec)
- Fine adjustment range = 0.394"/10mm
- Operational temperature limit 10°-40°C
- Operational humidity limit 30 - 80%



**QMSOFT software (page 77) is the perfect calibration and data management tool for use with this product!**

#### Technical Specifications

Part Number	54-197-777-0	54-197-877-0
Measuring Range	0 - 20"/500mm	0 - 40"/1000mm
Accuracy	<0.3μm + (L(mm)/1500)μm	<0.3μm + (L(mm)/1500)μm
Repeatability	0.000004"/0.0001mm	0.000004"/0.0001mm
Display	Computer added screen display: PC w/flat screen monitor, DDE server and Trimos WIN DHI software for display of functions and measuring results	
Resolution, switchable	0.0001", 0.00001", 0.000001" or 0.001mm, 0.0001mm, 0.00001mm	
Weight	176 lbs./80 kg.	264 lbs./120 kg.

Part Number	Description
54-197-777-0	0 - 20"/500mm Labconcept Premium
54-197-877-0	0 - 40"/1000mm Labconcept Premium

60"/1500mm and 80"/2000mm lengths available. Contact the Fowler Tech Department for pricing info.

## Labconcept

### Applications



Checking of ring gages from dia. 0.473"(12mm) to 10"(250mm) using table (54-197-011-0), clamps (54-197-142-0) & L-probes (54-197-162-0)



Checking of dial indicators and dial comparators up to 2"/50mm range using dial indicator holder (54-197-015-0)



Checking and setting of internal micrometers using vertical supports (54-196-107-0) & V-attachments (54-196-021-0)



Checking of plug gages and threaded plug gages from dia. 1.18" to 10"/30 to 250mm using table (54-197-011-0), clamps (54-197-142-0), small Ø anvils (54-190-806-0) & thread wires (54-197-007-0)



Checking of threaded ring gages from pitch 0.7 to 6mm/48 to 4 threads per inch (max. internal dia. 7.08"/180mm) using table (54-197-011-0), clamps (54-197-142-0), Internal measuring device (54-197-074-0) & T-Ball probes (54-197-075-0)



Checking of snap gages with range from 0.473 to 6"/12 to 150mm using table (54-197-011-0), snap gage holder (54-197-014-0) & L-probes (54-197-162-0)

**QMSOFT software (page 77) is the perfect calibration and data management tool for use with this product!**

## Accessories

Part Number	Description
Labconcepts	
54-197-300-0	0 - 14"/370mm Labconcept Premium Length Measuring System
54-197-320-0	0 - 21"/550mm Labconcept Premium Length Measuring System
54-197-340-0	0 - 41"/1050mm Labconcept Premium Length Measuring System
54-197-777-0	0 - 20"/500mm Labconcept Length Measuring System
54-197-877-0	0 - 40"/1000mm Labconcept Length Measuring System
Compensation Packages	
54-197-001-0	Premium temperature compensation package for Labconcept
54-197-003-0	Standard temperature compensation package for Labconcept
Measuring tables and supports	
54-197-011-0	Universal measuring table
54-197-019-0	Heavy duty universal measuring table
54-197-132-0	Holding device for indicator, fits on 54-197-011 for displacement
54-520-792-0	2"(50mm) digital indicator for use with 54-197-132-0
54-196-107-0	Set of vertically adjustable supports
54-196-108-0	Vertically adjustable support (one only)
54-196-022-0	Set of L-shaped supports, fits on 54-196-107-0
54-196-021-0	Set of V-shaped supports, fits on 54-196-107-0
Accessories for setting and checking of comparative measuring instruments and indicators	
54-190-805-0	Set of carbide Gage blocks attachments 1"(2" total)
54-196-006-0	Set of carbide Gage blocks attachments min. 0.8"
54-190-823-0	Dial indicator holder (for 3/8" and 8mm stems minimum)
54-197-015-0	Dial indicator holder for max range of 2"/50mm (for 3/8" and 8mm stems)
54-197-115-0	Adjustable holding device for lever dial indicator
54-190-825-0	Set of V-shaped blocks for checking external micrometers over 2.36"/60mm fits on No. 54-190-805-0
54-197-114-0	Holding device for checking external micrometers from 0.48" - 4"/12 - 100mm fits on No. 54-197-011-0
Accessories for external measurements	
54-190-806-0	Set of anvils with tungsten carbide tipped measuring surface diameter 0.256"/6.50mm
54-190-865-0	Set of knife shaped anvils with tungsten carbide measuring surfaces
54-190-807-0	Set of anvils with tungsten carbide balls for flat measuring surfaces
54-197-007-0	Set of wires on holders for checking pitch diameters of external threads, pitch of 72-5 threads per inch/0.25-5mm - requires 54-190-806-0
54-197-107-0	High accuracy plug measuring fixture for plugs up to 4" diameter, 11" length
Accessories for internal measurements	
54-197-162-0	Set of L-shaped probes (minimum internal measurement: 0.475"/12mm) for height of 1.57"/40mm
54-197-142-0	Set of clamping attachments for height of 2.36"/60mm
54-197-143-0	Set of quick clamping attachments
54-197-074-0	Measuring device for checking of internal diameters from 0.04"/1mm upwards and pitch diameters of internal threads from M4/32UNC-NC upwards for
54-197-075-0	Set of T-shaped measuring inserts with ruby balls for pitch from 56 threads per inch/0.7mm upwards - requires No. 54-197-074-0
54-197-076-0	Set of ruby ball measuring inserts for checking internal diameters from 0.04"/1mm upwards - requires No. 54-197-074-0



## Horizon Setting - HS4

Setting of measuring equipment with variable dimensions

The Horizon Setting HS4 is the ideal instrument for the control and calibration of measuring means with fixed and variable dimensions. Its high precision and finishing level position it as a top of the range model for workshop or laboratory use. It is the perfect answer to current needs in the manufacturing field.



This new model is based on the already well known Fowler Trimos Horizon Premium, but a new electronics and innovative display are incorporated. A modern and ergonomic design, as well as a great ease of use guarantee optimal and high productivity measuring results.

Fowler-Trimos proposes a complete range of instruments from 500mm to 3000mm. All measuring ranges are direct, which means that the whole measuring range is available without adjustment or intermediary recalibration. A large selection of easily interchangeable accessories completes the possible applications and guarantees a correct positioning of the instruments to be calibrated.

- Delivered with two parallel 25mm TEL5 gage blocks
- Robust design, ideal for use in workshop
- Very simple use
- Fast and precise checking
- Works on battery or power supply

Specially designed for setting:

- 2 point bore gages
- 2 point internal and external comparative measuring equipment
- Dial indicators
- Calipers



## Horizon Setting - HS4

### Additional Features

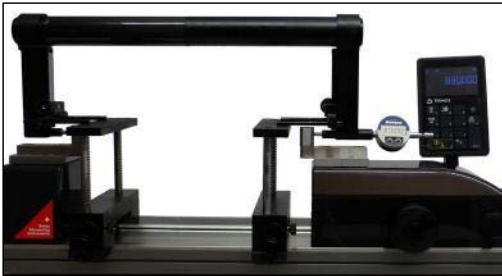


Two locking devices to hold the carriage



Setting force management with indicator

### Applications



Fowler Bowers Carbon Fiber Beam Gage



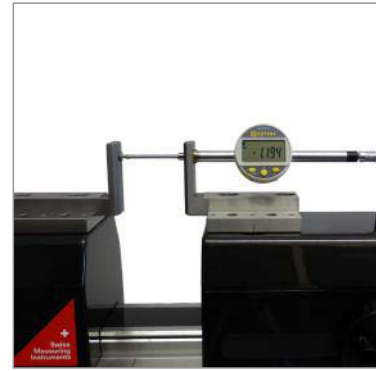
Setting of 2 point internal and external comparative measuring equipment (TEL5, TELMA7, TELMN7.2)



Checking of external micrometer held on a support (TA-SU-309, TA-SU-309, TEL5)



Setting of 2 point bore gages with holder (TA-SU-313, TA-SU-318, TEL5)



Checking of dial indicator (TEL5CN)

### Technical Specifications

Part Number	54-196-900-0	54-196-910-0	54-196-915-0	54-196-920-0	54-196-930-0
Measuring Range	0 - 21.5"/550mm	0 - 41.3"/1050mm	0 - 61"/1550mm	0 - 80.7"/2050mm	0 - 120"/3050mm
Max. Permission Error, EMPE	0.7 + L / 1000 $\mu$ m				
Repeatability, RMPE (2s)	0.5 $\mu$ m				
Maximal Resolution	0.00001"/0.0001mm				
Measuring Force	15 N				
Interfaces	USB / RS232				
Weight	207 lbs./94 kg.	271 lbs./123 kg.	335 lbs./152 kg.	399 lb./181 kg.	527 lbs./239 kg.
Max. Displacement Speed	1500 mm / s				
Operational Temperature	+10 / +40 C°				

Part Number	Description
54-196-900-0	0 - 21.5"/550mm Horizon Setting HS4
54-196-910-0	0 - 41.3"/1050mm Horizon Setting HS4
54-196-915-0	0 - 61"/1550mm Horizon Setting HS4
54-196-920-0	0 - 80.7"/2050mm Horizon Setting HS4
54-196-930-0	0 - 120"/3050mm Horizon Setting HS4

## Horizon Setting - HS6

Setting of measuring equipment with variable dimensions

The Horizon Setting HS6 is the ideal instrument for the control and calibration of measuring means with fixed and variable dimensions. Its high precision and finishing level position it as a top of the range model for workshop or laboratory use. It is the perfect answer to current needs in the manufacturing field.

This new model is based on the already well known Fowler-Trimos Horizon Premium, but a new electronics and innovative display are incorporated. A modern and ergonomic design, as well as a great ease of use guarantee optimal and high productivity measuring results.



Fowler Trimos proposes a complete range of instruments from 500mm to 3000mm. All measuring ranges are direct, which means that the whole measuring range is available without adjustment or intermediary recalibration. A large selection of easily interchangeable accessories completes the possible applications and guarantees a correct positioning of the instruments to be calibrated.

- Delivered with two standard anvil HPA-1
- Robust design, ideal for use in the workshop
- Very simple to use
- Fast and precise checking
- Works on battery or power supply
- 3N measuring force

### Specially designed for setting and checking

- 2 point bore gages
- 2 point internal and external comparative measuring equipment
- Dial indicators
- Calipers
- Setting of 2 points internal micrometers
- Checking of ring gages
- Checking of plug gages
- Checking of thread plug gages
- Checking of snap gages
- Checking of external micrometers



# Horizon Setting - HS6

## Additional Features



Setting of a large gages



Checking of ring gages from 12mm

## Applications



Checking of plug gages and pin gages, Max.  $\phi$  100mm/4", length 280mm/11" (TULM6/L0.5, LABC15)



Setting of 2 point internal and external comparative measuring equipment (TEL5, TELMA7, TELMN7.2)



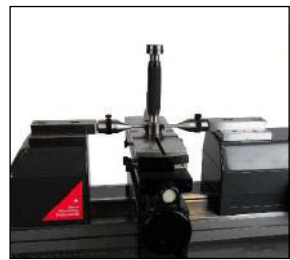
Checking of dial indicators and comparators (TA-IH-301)



Setting of 2 point bore gages with holder (TA-SU-313, TA-SU-318, TEL5)



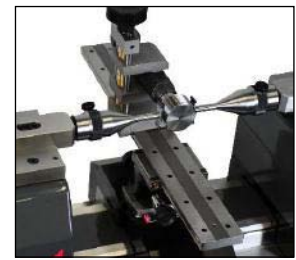
Checking of dial indicators and comparators (TEL 5CN)



Checking of thread plug gages, from m100 upwards (TA-SU-313, TEL6, 3P/0.17-3.2/S6.5)



Setting of 2 point internal measuring equipment (TELMA7)



Checking of thread plug gages, max. M100/ $\phi$ 4", length 280 mm/11" (TEL6, 3P/ 0.17-3.2/ S6.5, LABC15)

## Technical Specifications

Part Number	54-196-900-5	54-196-910-5	54-196-915-5	54-196-920-5	54-196-930-5
Measuring Range	0 - 21"/550mm	0 - 41"/1050mm	0 - 61"/1550mm	0 - 80"/2050mm	0 - 120"/3050mm
Max. Permission Error, EMPE	0.7 + L / 1000 $\mu$ m				
Repeatability, RMPE (2s)	0.2 / 0.000008 $\mu$ m				
Maximal Resolution	0.00001"/0.0001mm				
Measuring Force	3 N				
Interfaces	USB / RS232				
Weight	207 lbs./94 kg.	271 lbs./123 kg.	335 lbs./152 kg.	399 lb./181 kg.	527 lbs./239 kg.
Max. Displacement Speed	1500 mm / s				
Operational Temperature	+10 / +40 C°				

Part Number	Description
54-196-900-5	0 - 21"/550mm Horizon Setting HS6
54-196-910-5	0 - 41"/1050mm Horizon Setting HS6
54-196-915-5	0 - 61"/1550mm Horizon Setting HS6
54-196-920-5	0 - 80"/2050mm Horizon Setting HS6
54-196-930-5	0 - 120"/3050mm Horizon Setting HS6

## Accessories

Part Number	Description
Measuring tables and supports	
54-196-160-0	Universal measuring table
54-197-132-0	Holding device for indicator, fits on 54-196-160-0 table for displacement
54-196-107-0	Set of vertically adjustable supports
54-196-108-0	Adjustable support (one only)
54-196-022-0	Set of L-shaped supports to fit No. 54-196-107-0/108-0
54-196-021-0	Set of V-shaped supports to fit No. 54-196-107-0/108-0
54-197-001-0	Premium temperature compensation package for digital Horizon
54-197-003-0	Standard temperature compensation package for digital Horizon
54-197-019-0	Heavy duty universal measuring table
Accessories for setting and checking of comparative measuring instruments and indicators	
54-190-805-0	Set of carbide gage block attachments 1" (2" total)
54-196-006-0	Set of carbide gage block attachments for checking calipers
54-190-823-0	Dial indicator holder (for 3/8" and 8mm stems)
54-197-015-0	Dial indicator holder for max range of 2"/50mm (for 3/8" and 8mm stems)
54-197-115-0	Adjustable holding device for lever dial indicator
54-190-825-0	Set of V-shaped blocks for checking external micrometers over 2.36"/60mm requires 54-190-805-0
54-197-114-0	Holding device for external micrometers from 0.48" - 4"/12 - 100mm requires 54-196-160-0
54-190-820-0	Holding device for setting of 2 point bore gages (fits on standard probes)
54-190-817-0	Set of supporting plates for setting of 2 point bore gages total length of 13"/330mm
54-190-829-0	Set of supporting plates for setting of 2 point bore gages total length of 7.08"/180mm
54-196-040-0	Adjustable support for setting of the reversal point requires 54-190-817-0 or 54-190-829-0
54-190-807-0	Set of anvils with Tungsten carbide balls for flat measuring surfaces
Accessories for external measurements	
54-190-806-0	Set of anvils with tungsten carbide tipped measuring surface diameter 0.256"/6.50mm
54-197-806-0	Set of anvils with tungsten carbide tipped measuring surface diameter 0.315"/8mm
54-190-865-0	Set of knife shaped anvils with tungsten carbide measuring surfaces
54-190-807-0	Set of anvils with tungsten carbide balls for flat measuring surfaces
54-197-007-0	Set of wires on holders for checking pitch diameters of external threads, pitch of 72-5 threads per inch/0.25-5mm
54-197-107-0	High accuracy plug measuring fixture for plugs up to 4" diameter, 11" length
Accessories for internal measurements	
54-197-162-0	Set of L-shaped probes (minimum internal measurement: 0.475"/12mm for height of 1.57"/40mm
54-190-815-0	Clamping device for snap gages from 0.475" to 6"/12 to 150mm
54-197-143-0	Set of quick clamping attachments
54-197-142-0	Set of clamping attachments for height of 2.36"/60mm - use with 54-196-160-0
54-190-818-0	Set of measuring devices for checking of pitch diameters of internal threads (minimum internal diameter of 0.475"/12mm) requires No. 54-190-826-0
54-190-826-0	Set of cones, 60°, for pitch of 64-5 threads per inch/ 0.4 to 5mm. Use ring No. 54-190-804-0
54-190-804-0	Setting ring, 60° for use with 54-190-826-0
54-197-070-0	Measuring device for checking of internal diameters from .04"/1mm upwards and pitch diameters of internal threads from M4/32UNC-NC upwards for analog system - requires 54-197-073-0
54-197-073-0	Analog display for measuring device for No. 54-197-070-0
54-197-074-0	Measuring device for checking of internal diameters from 0.04"/1mm upwards and pitch diameters of internal threads from M4/32UNC-NC upwards for digital system
54-197-075-0	Set of T-shaped measuring inserts with ruby balls for pitch from 56 threads per inch/0.7mm upwards for use with 54-197-070-0 & 074-0
54-197-913-0	T-shaped measuring insert with ruby balls, dia. 0.01319"/.335mm for use with 54-197-070-0 & 074-0
54-197-076-0	Set of ruby ball measuring inserts for checking internal diameters from 0.04"/1mm upwards for use with 54-197-070-0 & 074-0
Reference gages	
54-197-050-0	Master plug gage, dia 1.9685"/50mm includes calibration certificate
54-197-040-0	Master ring gage, dia. 1.5748"/40mm includes calibration certificate



## THV Horizontal Measuring System

The Fowler-Trimos innovative horizontal instrument that fulfills current quality requirements for many applications.

Multiple accessories ensure versatile applications for checking all types of gages such as plug gages, ring gages, thread plug gages, lever dial indicators, etc. as well as precision manufactured parts. Measuring range 2" and Application range 4".

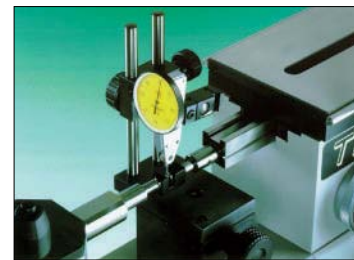


High accuracy is guaranteed by perfect instrument construction and the Heidenhain measuring system. The simplicity of the instrument and its ease of use allows precise and quick performance of all measurements. Adjustable Measuring Force is suitable for measuring thread members utilizing the 3 wire method.



### Technical Specifications

<b>Overall application range</b>	Using standard probes
External measurements	0 - 4"/0 - 100mm
Internal measurements	0.4 - 4"/10 - 100mm
<b>Scale range (travel)</b>	Absolute display over 2"/50mm
<b>Max. measuring band error</b>	0.000016" (0.4µm) reference temperature 20°C
<b>Resolution</b>	0.00001", 0.000001"
	0.001, 0.0001 or 0.00002mm
<b>Repeatability</b>	0.000005" ±2s (0.1µm)
<b>Adjustable measuring force</b>	0 to 12N (0 - 40 oz.)



Part Number	Description
54-198-508-0	THV with standard table
54-198-558-0	THV with floating table
Readouts:	
54-198-400-0	USB Signal Converter Box for THV with WinDHI Software
54-198-111-0	THV Digital Display

### THV Horizontal/Vertical

Part Number	Description	Part Number	Description
54-198-001-0	Standard table (included with 54-198-508-0)	54-198-260-0	Reverse attachment - European
54-198-010-0	Set of internal probes from 0.4"/10mm up for standard table (included with 54-198-508-0)	54-198-261-0	Reverse attachment - American
54-198-012-0	Set of 6mm Ø x 34mm internal ball probes from 0.51"/13mm up for standard table	54-198-300-0	Pneumatic thread device, Allows up to 40oz. of pressure.
54-198-020-0	Set of internal probes from 0.4"/10mm up for floating table (included w/54-198-558-0)	53-190-019-0	Standard 0.256"/6.5mm diameter external probes included with all units
54-198-022-0	Set of 6mm Ø x 41mm internal ball probes from 0.51"/13mm up for floating table	53-190-032-0	External probe with M2.5 x 0.45 thread
54-198-100-0	Block support for 54-198-101-0 and 54-198-150-0	53-190-033-0	0.315"/8mm diameter external probes
54-198-101-0	H-plate with clearance	53-190-034-0	External probes with 4.48 thread
54-198-150-0	Test indicator holding device	53-190-037-0	0.078"/2mm diameter external probes
54-198-160-0	Block support for 54-197-106-0	54-197-007-0	Thread wires and holders
54-198-170-0	Support device with V for external diameters	54-197-503-0	Support for display
54-198-180-0	Micrometer spindle for testing dial and test indicators	54-198-175-0	Support pin 0.12"/3mm diameter for No. 54-198-170-0
54-198-190-0	Indexable lever handle for spindle displacement	54-198-176-0	Support pin 0.24"/6mm diameter for No. 54-198-170-0
54-198-181-0	8mm clamp for holding dial indicators	54-198-015-0	Inserts for internal measuring from 0.197"/5mm up for table No. 54-198-001-0
54-198-182-0	3/8" clamp for holding dial indicators	54-198-025-0	Inserts for internal measuring from 0.197"/5mm up for table No. 54-198-250-0
54-198-250-0	ID floating table (included with 54-198-558-0)	54-800-800-0	Custom fitted travel case





## INCLINATION

*For inclination, alignment and flatness measuring*

## Clinotronic-S

The Clinotronic-S can be connected to an Android™ device, which can then be used as a remote display. This new feature makes the instrument much more versatile and suitable for many applications. It is built on the success of the Clinotronic PLUS, while retaining the features that made it famous, like its reliability and versatility, plus it adds the latest technology:

- The Clinotronic-S is a portable precision instrument for measuring inclinations up to  $\pm 45^\circ$
- The large, backlit, high contrast color display provides excellent readability even under adverse conditions in the workshop or under a machine



**Features:**

- Wireless functionality (APP wylerUNIVERSAL for Android™)
- Data transmission via USB cable as well
- User friendly
- Adjustable to local gravity
- Improved mechanical accuracy
- Excellent color display with low power consumption



Part Number	Description
54-635-605-0	Clinotronic - S

## Clinotronic Plus

The Fowler Wyler Clinotronic Plus is an electronic level with unsurpassed versatility. It is economically priced, uses a specially designed microprocessor and the well-proven Wyler inclination sensor.



**Features:**

- Range of  $\pm 45^\circ$ , capacity of 0-360°
- Resolution of 0.01° (selectable)
- Absolute or relative measuring mode selectable by push button
- Seal-tec technology for excellent performance even in difficult environmental conditions
- Interface connection RS-232 is integrated. Special purpose cables available
- No loss of calibration data by power failure
- Response time: value available within 5 seconds
- Repeatability:  $<.01^\circ$
- Linearity: 3 min. of arc + 1
- Housing: aluminum hard anodized.
- Dimensions: 4 x 3 x 1"(100 x 75 x 30mm)



Part Number	Description
54-635-601-0	Clinotronic PLUS

Inclination  
For inclination, alignment and flatness measuring



## Zerotronic Sensor System

WYLER AG's Zerotronic, digitized inclination sensor, fulfills the highest requirements concerning accuracy, ranges, sensitivity and temperature stability. Digital technology allows the transmitting of signals over long distances without loss of accuracy.

Small angles with a high resolution as well as large angles are measured with this sensor technology. A temperature sensor mathematically compensates for changing environmental conditions, improving measuring results.

- All weather operations
- Wireless applications
- RS-485 output or RS-232 with readout or transceiver converter
- Labview drivers



## 2-D Sensor



Zeromatic



For more information and prices on the Zerotronic, call Fowler's Technical Department 1-800-788-2353

## Cline Frame

Wyler is recognized as the producer of the finest inclination measuring devices in the world. From pre-configured, wireless measuring sets to modular components, Fowler offers a wide range of Wyler instruments to measure inclination, flatness, alignment and more. Their quality and reliability is unsurpassed in the inclination community.



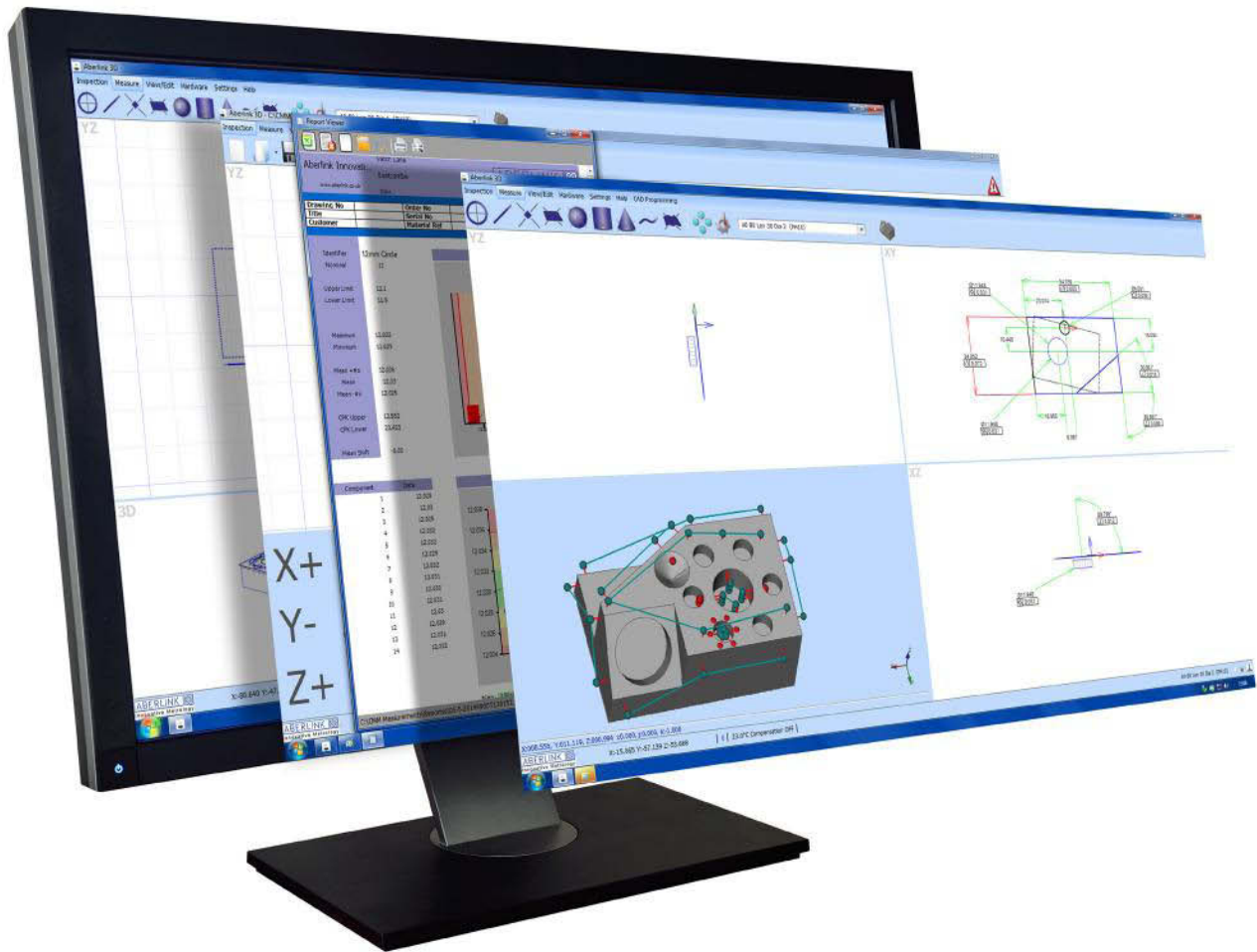
Contact us with your specific measuring requirements and one of our technical specialists will assist you with the ideal instrument or configuration to suit your needs.





# Fowler®

HIGH PRECISION



SOFTWARE



## FUSION Software - Making Measurement Easy

One software package for multiple systems CMM, zCAT, Arms, Vision Systems and Optical Comparators.

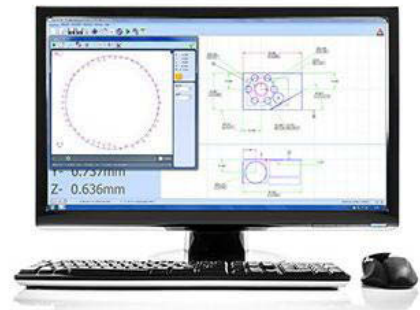


The whole philosophy for Fowler FUSION is to make measurement easy. FUSION software has been written by engineers for engineers and sets the industry standard for simple-to-use software. Designed around a graphical interface, FUSION 3D can work in 2D or 3D, on manual or CNC CMMs and is equally at home when used with either touch, scanning or vision systems. It is easy to understand why FUSION has become the software of choice not only for FUSION, but for numerous other manufacturers of measuring devices around the world.

FUSION 3D software is not only way ahead of its competition in being the industry standard for 'easy-to-use' software, but also has the depth of functionality to make it the choice for either occasional users or full-time inspection professionals.

Fowler FUSION is the software used with our A-line arms. The philosophy for Fowler FUSION is to make measurement easy. Fowler FUSION 3D software has been written by engineers for engineers and sets the industry standard for simple-to-use software.

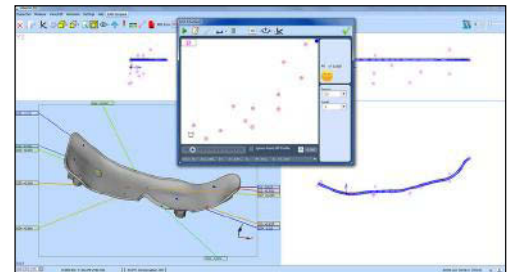
Designed around a graphical interface, Fowler FUSION can work in 2D or 3D, on manual or CNC CMMs and is equally at home when used with either touch, scanning or vision systems.



### Additional Fowler FUSION software module:

#### CAD Comparison

The CAD Comparison module gives the capability to compare measured points to a CAD model. This is the best way to measure complex geometries, or to inspect parts for which drawings do not exist.



#### Feature Inspection:

- Automatic measurement routines
- Powerful interactive graphics window
- Automatic feature recognition
- 2D and 3D inspection
- Geometric feature inspection
- Free form curve inspection

#### Programming Tools:

- Teach & repeat programming
- Drag and drop program editor
- Run programs from any point
- Measure a subset of features
- Simple object-based programming
- No complex programming language

#### Report Formats:

- Engineering drawing GD&T
- Simple PASS/FAIL
- Form plots
- Batch summary
- Tabulated reports
- Graphical fly-out labels
- Drag & drop reporting
- Real-time SPC
- Export to Excel
- Historical data reporting

Part Number	Software
54-960-070-0	FUSION 3D Software - Standard

## FUSION Software

FUSION software is revolutionary. As a component is measured a representation of it is built up on the screen. The user simply clicks on the measured features to call up dimensions exactly as they would appear on a drawing.

Inspection reports can be in the form of fully dimensioned graphical representations as created on the screen, or tabulated reports in various formats that can show nominals, tolerances, errors, pass/fails, geometric tolerances etc. These reports can also be output to an Excel spreadsheet.

Further reports are available to show the form of features (roundness, straightness etc.), hole or point positions, or complete batch results on one report. The user's company name also appears on all outputs.

Every time a component is inspected, a program for measuring subsequent components is automatically created. The software also calculates 'safe' moves between features, even when the probe is indexing – just another thing that the operator doesn't have to worry about!

Popular throughout the world and available in many languages, FUSION measurement software provides the user with a powerful, yet easy-to-use solution for inspection measurements. This not only increases component throughput but vastly reduces the learning period for new users.

Every FUSION license also benefits from, [no annual subscription or maintenance fees](#) and [free software upgrades](#) for life, hence minimal cost of ownership. Welcome to cost-effective precision.

### Feature Inspection:

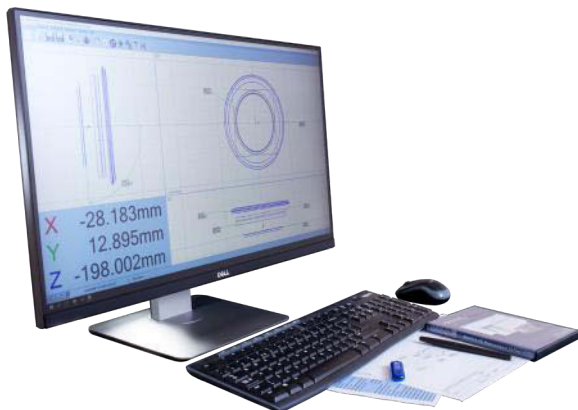
- Automatic measurement routines
- Powerful interactive graphics window
- Automatic feature recognition
- 2D and 3D manual and CNC inspection
- Geometric feature inspection
- Free form curve inspection
- DXF data import/export
- STEP and IGES export for reverse engineering
- Feature construction
- Intelligent feature projection
- GD&T dimensions and tolerances

### Programme Tools:

- Engineering drawing GD&T report
- Simple PASS/FAIL report
- Form plots
- Batch summary report
- Tabulated reports
- Graphical fly-out labels
- Drag & drop reporting
- Real-time SPC
- Combine multiple views
- Export to Excel
- Historical data reporting

### Report Formats:

- Teach & repeat programming
- Drag and drop programme editor
- Run programs from any point
- Measure a subset of features
- Simple object-based programming
- No complex programming language
- Automated batch inspection
- Password protect programmes
- Automatic safety moves
- Feature replicator



## DID YOU KNOW?

Fowler FUSION revolutionary 3D software inspection package is available for CMM retrofits, optical comparator retrofits, vision systems and articulating arms.

## FUSION Software

### CAD Comparison Software Module

The FUSION CAD Comparison software module enhances FUSION 3D with the capability to compare measured points to a CAD model. Often this will be the only way to measure complex parts, or perhaps sometimes drawings for the component simply don't exist.

Powerful alignment routines allow measurement points to be best-fitted to the model. Colour coded errors can then be displayed on the model to produce both graphical and tabulated reports that are extremely clear and very easy to understand.

FUSION'S CAD comparison module allows the input of either STEP or IGES files as standard and allows reports to be exported as an Excel spreadsheet. It really does make measuring complex parts easy, whether on a manual or CNC CMM.

#### CAD Formats:

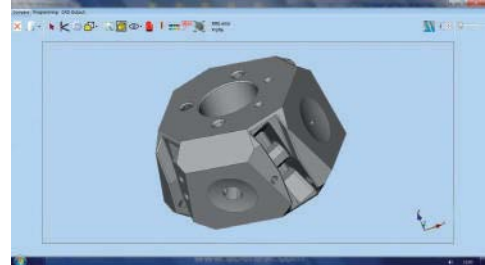
- IGES and STEP import and export
- DXF export
- Re-scale Models
- Simple measurement of complex parts

#### Alignments:

- Point cloud best-fit
- Feature best-fit
- Best-fit constraints
- Graphical and tabulated reports
- Export to Excel

#### Report Formats:

- On CAD fly-out labels
- Colour deviation whiskers
- Colour point markers
- Configurable colour options
- Combine multiple views
- Graphical and tabulated reports
- Export to Excel



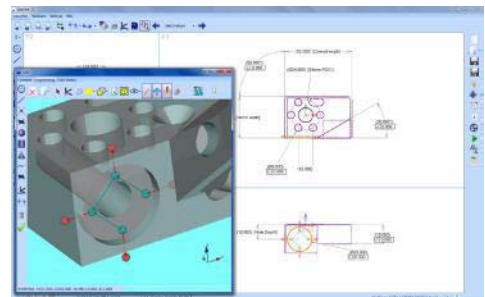
Part Number	Description
54-950-106-0	FUSION 3D CAD Comparison Module
54-950-106-1	FUSION 3D CAD Comparison Module - Off-line

### Programming from CAD Software Module

For many years FUSION 3D software has been setting the industry standard for both ease of use and speed of programming. However, until now this has been best done by using the teach-and-repeat method of programming when measuring a component. But what if you want to prepare the measurement programme before you even have the first component? Our CAD programming module allows the simplest programming possible from either an IGES or STEP CAD model.

If you can use FUSION 3D software then you will already know how to use the CAD programming module – it couldn't be easier. Rather than taking measurement points on a component, you can now just click on the surface of the model where you would like the points to be taken.

Feature predict works in the same way as when measuring, for instance, if you click in four places on the same plane on the model, then the software will automatically create a Plane Measure unit with those four points in it. Then click on a different feature and it will automatically close the Plane window and look for another feature. If you click on a circular feature it will take just one click to produce a circle or two clicks for a cylinder. Suddenly programming in FUSION 3D just got even easier!



#### DID YOU KNOW?

The Programming from CAD module allows programs to be created away from the CMM so the machine is free to measure other parts. You don't even need a part to create a program - just the model.

Part Number	Description
54-950-107-0	FUSION Programming from CAD Module
54-950-107-1	FUSION 3D Programming from CAD Module - Off-line



# SYLCOM

Data processing software

SYLCOM software designed specifically for our USB and Bluetooth Sylvac tool, with expanding capabilities in the form of add-ons. Each package will be supplied with a USB dongle license key, allowing the software to be used on different computers as long as the license key is present.



For Sylvac **Bluetooth**<sup>®</sup> Gages



# SYLCOM Software

## Sylcom Lite

Same features as SYLCOM standard, but FREE and restricted to one instrument connected. Download it at [www.fowlerprecision.com](http://www.fowlerprecision.com).

## Sylcom Standard

Software protected by payable license (dongle or web license). Allows to connect up to 16 instruments.

## Sylcom Pro

Allowing to connect up to 15 instruments by USB cable, up to 40 instruments by Bluetooth® and up to 128 instruments by M-BUS modules (total maximum 128 connected instruments). Several features such as control plans, monitoring, statistics and SPC export are available (60 days trial version available).

## Sylcom Expert

Offering the same functionalities as the PRO version, but with the additional possibility of connecting up to 500 instruments via Bluetooth® with the "On the fly" mode, to communicate in the OPC-UA protocol and to automatically suggest tool corrections to some CNCs machines.

## Vmux

Software supports up to 32 instruments, (max. 32 USB or max. 16 Bluetooth and 16 USB). For Bluetooth connection dongle is required. Vmux Lite FREE on our website [www.fowlerprecision.com](http://www.fowlerprecision.com).

- The protocol ensures compatibility with all SPC software using the transmission and/or the query data vis the COM ports.
- Sending data in EXCEL is integrated

## Other Software ....

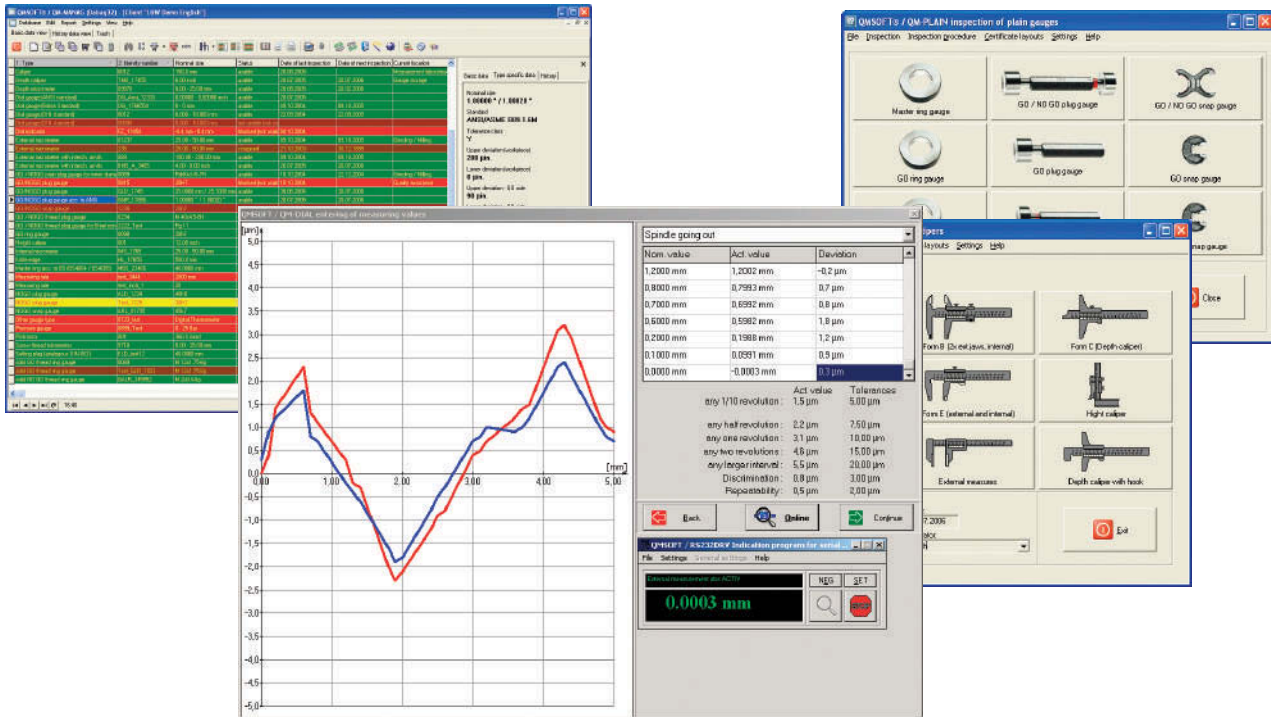
### Sylvac BT Smart App for Android and ISO

Great for smartphones and touchpads, Android 4.3 and iPhones with Bluetooth 4.0 low energy. Ability to save data on the touchpad or smartphone into a PDF or Excel and export the data in Google Drive or iCloud. FREE! One tool at a time. Download it at [www.fowlerprecision.com](http://www.fowlerprecision.com).

Part Number	Description
54-981-713-2	Sylcom Standard
54-981-713-4	Sylcom Pro
54-981-725-5	Sylcom Expert
54-777-120-0	Vmux

## QMSOFT (Quality Management Software)

QMSOFT is the perfect calibration and data management tool for Fowler's electronic calibration instruments such as the Horizon, Labconcept and THV.



The QMSOFT (Quality Management Software) system is a turn-key calibration package that enables the monitoring of a company's complete range of measuring and inspection equipment. To do this, QMSOFT uses a number of special modules which allow not only the management, but also the controlled measurement of gages.

### Features:

- Gage management and gage inspection are integrated into the system with equal importance
- Specially developed modules make it possible for the calibration of all common gages using any national, international or user defined standard. It is therefore not necessary to define an inspection procedure for each gage type.
- Extensive support for directly connected measuring devices including Trimos & Sylvac calibration instruments.
- All normal sizes and tolerances for gages are calculated by the program
- Inspection certificates may be customized for individual presentation using the built in word processor
- Each module can be used as a stand-alone component

Part Number	Description
54-778-100-0	QM-Management software
54-778-150-0	QM-Dial Gage software
54-778-500-0	QM Soft Standard Package: QM-Manage, QM-Plain & QM-Thread Gage, QM-Dial, QM-Caliper, QM-Micrometer Software
54-778-175-0	QM-Gage Block Software
54-778-200-0	QM-Caliper software
54-778-250-0	QM-Micrometer software
54-778-300-0	QM-Pin Gage software
54-778-350-0	QM-Starter Package: Management, plain gage and thread gage software
54-778-800-0	QM-TTAP Tapered Thread software
54-778-850-0	QM-SPLINE Spline software



*Notes* \_\_\_\_\_

*Notes* \_\_\_\_\_





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