

Crysta-Plus M Manual Floating Type CMM

Bulletin No. 1810



Low-Cost!
High-Accuracy!
Compact!
and Easy-to-Operate!

Mitutoyo

Manual Floating Type Coordinate Measuring Machines

The Crysta-Plus M has been developed by Mitutoyo in its quest for low-cost, easy-to-use coordinate measuring machines without compromising measuring accuracy.

Crysta
-Plus M

**Crysta-Plus
M544/574**



**Crysta-Plus
M776/7106**

Designed for high-accuracy

The Crysta-Plus M offers the highest measuring accuracy of $E=(3.5+4.5L/1000)\mu\text{m}$ in this class.

The Y-axis guide rail, which is a one-piece design with the granite plate, shows very little deterioration even over a long period of time, and thus promises to maintain stable accuracy for a long time.

The high precision air bearings are employed on all axial guideways. Its smooth sliding results in fatigue-free 3-D measurements.

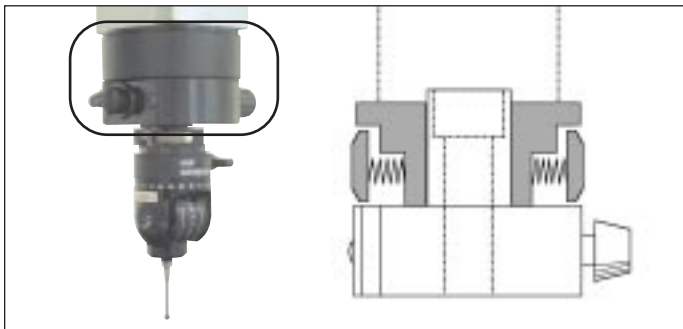
One-Touch Air Clamp

Simply flip the appropriate switch at the foot of the column to air-clamp an axis. This allows workpieces to be quickly and easily measured especially using a centering microscope.



Constant measurement

The probe adapter with a constant grip is attached to the bottom of the Z-axis spindle to minimize a personal error in measurement. During measurement, this grip can reduce the influence of the fine swinging of the hand and improve a repeatability in measurement.



Touch Signal Disable Switch

A switch to disable touch signal input is incorporated into the probe adapter so input can be disabled/enabled easily without moving to the computer.

Upgrading to CNC

The Crysta-Plus M can be upgraded to a CNC machine. Contact to Mitutoyo for details.

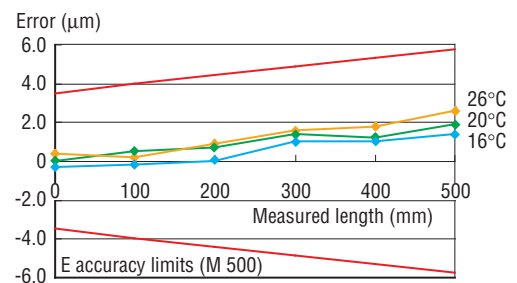
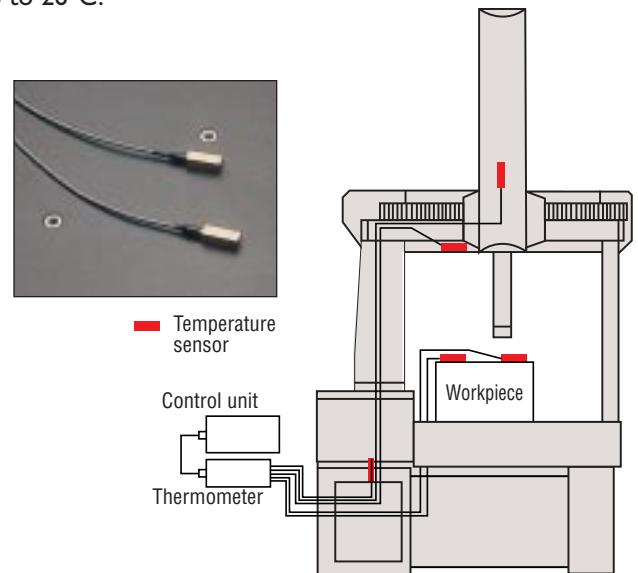
Probe illumination (optional)

The white LED probe illumination unit can be installed at the rear of the probe adapter to illuminate the area around the tip of the stylus. This is very useful for the deep hole measurement.



The World's First Temperature Compensation System for Manual CMM (optional)

An optional temperature compensation system can be installed on the Crysta-Plus M. It guarantees the accuracy of the CMM main unit under temperature conditions of 16 to 26°C.



Crysta-Plus M544/574

Technical Data

Specifications

Model		Crysta-Plus M544*	Crysta-Plus M574
Range	X-axis	19.69" (500mm)	19.69" (500mm)
	Y-axis	15.75" (400mm)	27.56" (700mm)
	Z-axis	15.75" (400mm)	15.75" (400mm)
Length standard		Reflective linear encoder	
Resolution		.00002" (0.0005mm)	
Accuracy (20°C) ISO 10360-2:1994		E = (3.5+4.5L/1000)µm R = 4.0µm (when using TP20)	
Guide method		Air bearing for each axis	
Clamping method		Quick air clamp for each axis	
Measuring table	Material	Granite	
	Working area	25.12" x 33.86" (638 x 860mm)	25.12" x 45.67" (638 x 1160mm)
	Tapped insert	M8x1.25 (for clamping workpiece)	
Maximum workpiece height**		20.08" (510mm)	
Maximum workpiece weight		396 lbs. (180kg)	
Air pressure		0.4MPa (4kgf/cm ²)*** or 58 PSI	
Air consumption		50 liters per minute (in normal state)**** or 1.80 CFM	
Dimensions	Width	42.60" (1082mm)	42.60" (1082mm)
	Depth	42.44" (1078mm)	57.40" (1458mm)
	Height	89.96" (2285mm)	89.96" (2285mm)
Mass (including the machine stand)		1089 lbs. (495kg)	1353 lbs. (615kg)

* Model M544 is a "special order"



Crysta-Plus M544

* ISO 10360-2:1994

E: Error of indication of volumetric length measurement

L: Measuring length (mm)

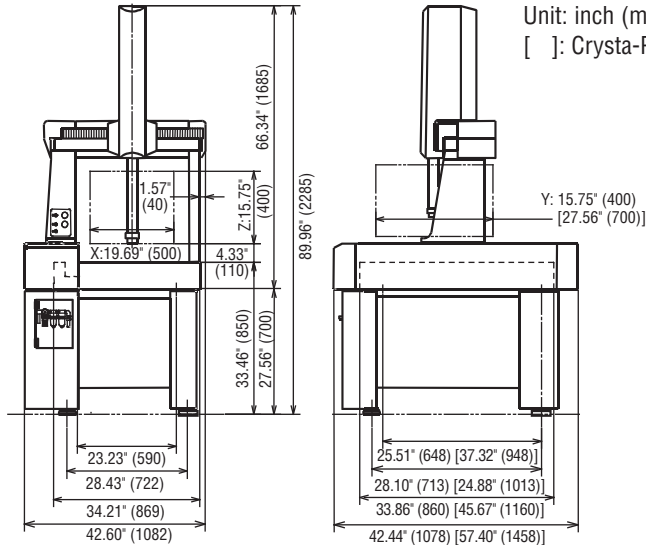
R: Probing error

** The distance between the bottom face of the Z spindle and the table top

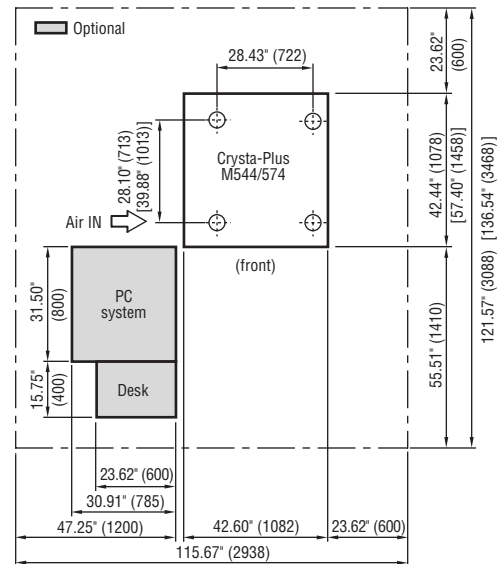
*** 0.5MPa to 0.9MPa at the air source

**** 100 liters per minute (in normal state) at the air source

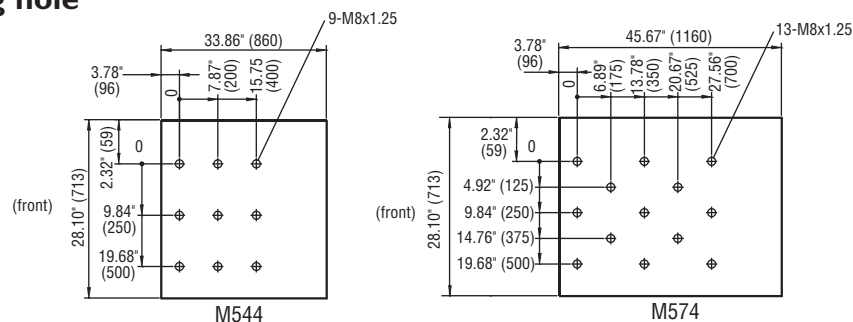
Dimensions



Example of installation



Layout of clamping hole on surface plate



Crysta-Plus M776/7106

Technical Data

Specifications

Model		Crysta-Plus M776*	Crysta-Plus M7106
Range	X-axis	27.56" (700mm)	27.56" (700mm)
	Y-axis	27.56" (700mm)	39.37" (1000mm)
	Z-axis	23.62" (600mm)	23.62" (600mm)
Length standard		Reflective linear encoder	
Resolution		.00002" (0.0005mm)	
Accuracy (20°C) ISO 10360-2:1994		E = (4.5+4.5L/1000)µm R = 5.0µm (when using TP20)	
Guide method		Air bearing for each axis	
Clamping method		Quick air clamp for each axis	
Measuring table	Material	Granite	
	Working area	34.65" x 59.91" (880 x 1420mm)	34.65" x 67.72" (880 x 1720mm)
	Tapped insert	M8x1.25 (for clamping workpiece)	
Maximum workpiece height**		31.50" (800mm)	
Maximum workpiece weight		1100 lbs. (500kg)	1760 lbs. (800kg)
Air pressure		0.4MPa (4kgf/cm ²)*** or 58 PSI	
Air consumption		50 liters per minute (in normal state)**** or 1.80 CFM	
Dimensions	Width	57.87" (1470mm)	57.87" (1470mm)
	Depth	64.96" (1650mm)	76.77" (1950mm)
	Height	111.41" (2830mm)	111.41" (2830mm)
Mass (including the machine stand)		3058 lbs. (1390kg)	3586 lbs. (1630kg)



Crysta-Plus M7106

* ISO 10360-2:1994

E: Error of indication of volumetric length measurement

L: Measuring length (mm)

R: Probing error

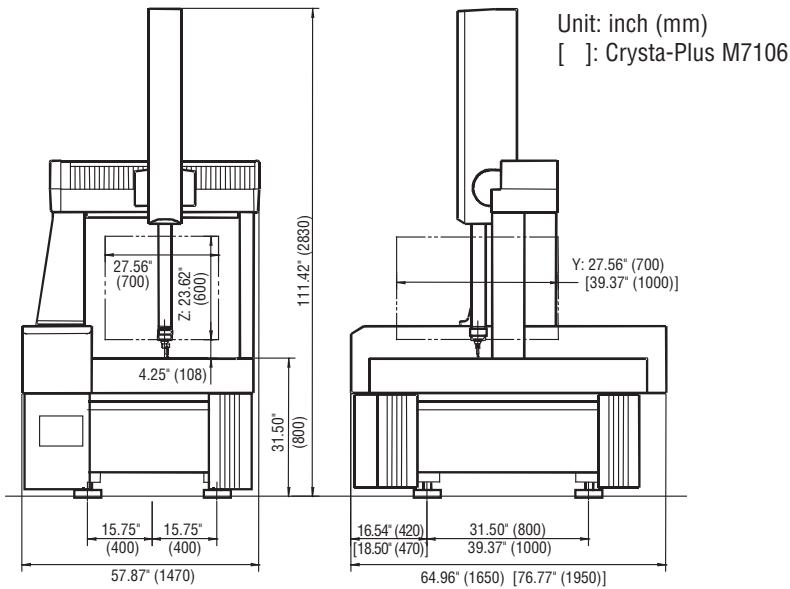
** The distance between the bottom face of the Z spindle and the table top

*** 0.5MPa to 0.9MPa at the air source

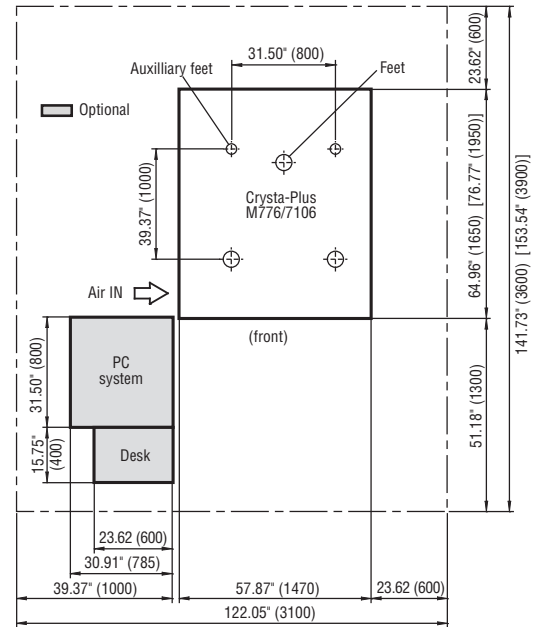
**** 100 liters per minute (in normal state) at the air source

* Model M776 is a "special order"

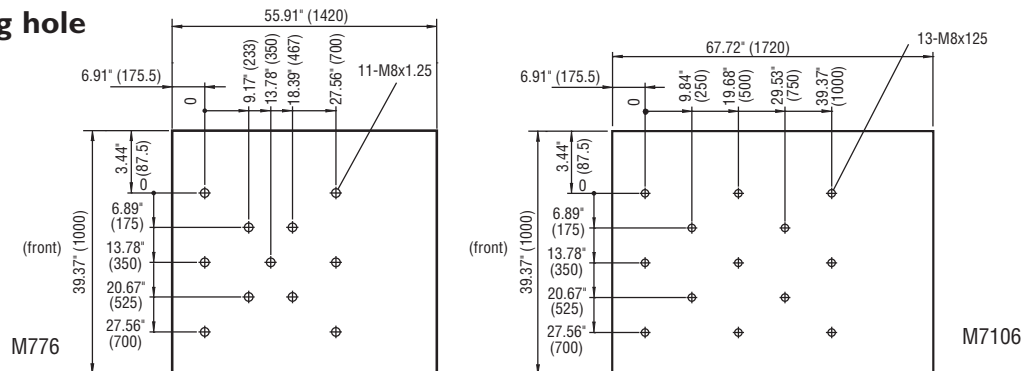
Dimensions



Example of installation



Layout of clamping hole on surface plate



Data Processing Program

MCOSMOS

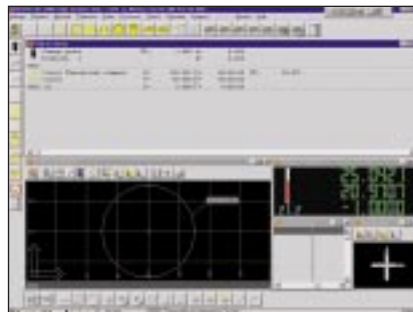


Geopak®

General purpose program Geopak® is a new 3-D data analysis and CMM programming module that operates under MCOSMOS. This module includes all features of the geometric measuring program for CMMs. Its enhanced graphic displays and the built-in interactivity on screen allow an inexperienced operator to measure complex parts, while maintaining the flexibility demanded by power users.



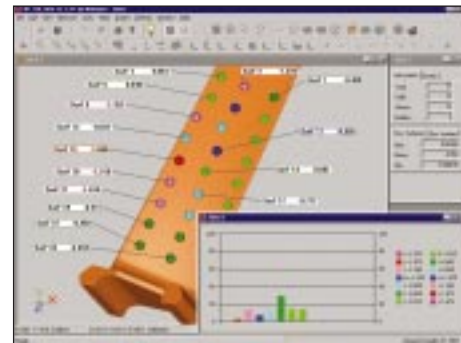
Machine position and temperature



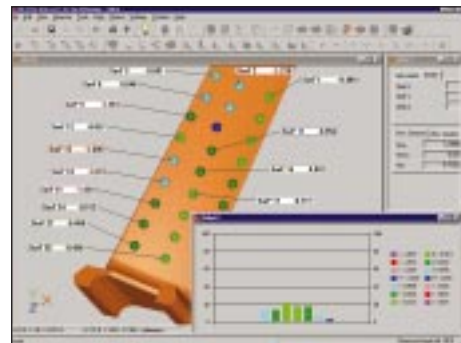
Geopak®

3D-TOL

3D-Tol allows you to make an immediate compensation of actual part 3-D surface data obtained from Geopak® to the nominal data generated by a CAD system.



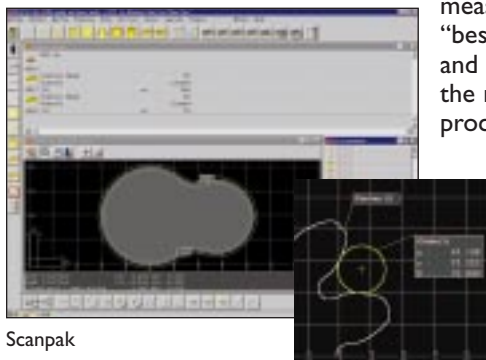
Before best fitting



After best fit

Scanpak

Profile data analysis program Scanpak allows the user to compare multi-point scanning data obtained from Geopak® to the nominal data generated by a CAD system. The result can be output as easy-to-look graphics. Scanpak can also process the measured data to show "best-fit" conditions and feed them back to the manufacturing process.



Scanpak

Probes

Touch Signal Probes and Hard Probes

Various high precision touch-signal probes and probe heads are available for the Crysta-Plus M CMMs as well as hard probes. [shank diameter: .55" (14mm).]



Stylus



MH20 probe head and TP20 probe



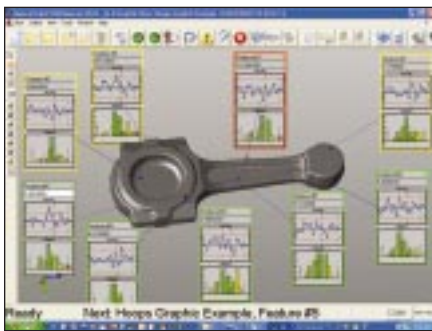
Hard probes

MeasurLink® – www.measurlink.com

Designed for Coordinate Measuring Machines (CMMs) and Vision Measuring Machines (Quick Scope and Quick Vision machines). It is based on all the functionality of the latest data acquisition software and is fully integrated with the latest Mitutoyo CMM, Vision and Form Software, delivering process capability and part acceptability to operators at a glance.

MeasurLink® STATMeasure / STATMeasure PLUS

MeasurLink® STATMeasure / STATMeasure PLUS are Real-Time Data Acquisition modules for CMMs and Vision Measuring Machines, and are the base modules for a Total Quality Environment.



MeasurLink® STATMeasure PLUS

MeasurLink® Process Manager

This module monitors all MeasurLink® Real-Time activities on a computer network. It provides realtime feedback about the behavior and control state of all networked SPC Data Acquisition Stations across the shop-floor, giving the QC/Production Manager the perfect tool to organize and maintain a shop floor quality program at a glance.

MeasurLink® Process Analyzer

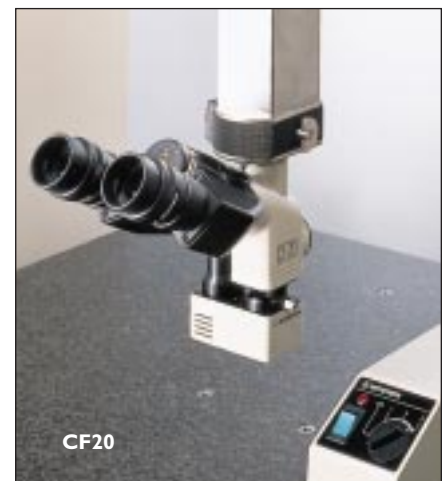
The Process Analyzer module is an application that analyzes process performance and capability. It gives the ability to also identify problem areas in the manufacturing environment, allowing corrective action to be taken at an early stage, with statistical data easily manipulated and understood within an intuitive interface.

MeasurLink® Gage R&R and Gage Management also available

CF10 and CF20 Centering Microscopes

The Centering Microscopes are suitable for measuring small holes and elastic or soft workpieces that contact-type probes cannot measure.

Optional accessories such as video monitoring system, binocular eyepiece, template eyepiece are also available.



CF20



- Coordinate Measuring Machines
- Vision Measuring Systems
- Surface, Form and Contour Measurement
- Optical Measuring
- Sensor Systems
- Hardness Measuring
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

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Precision is our Profession