MTL

OPTICAL MEASURING MACHINES

English Version

Make VICIVISION your first choice for quality inspection

From the experience of thousands of customers comes the range with the best price to performance ratio.

Prima: the measuring machine for all CNC lathes.

From 60 to 140 mm in diameter and 300 to 600 mm in length.

306 PRIMA

609 PRIMA

PRIMA Series

WORKING IN SHOPFLOOR ENVIRONMENTS FOR MORE THAN 15 YEARS

All the experience of thousands of VICIVISION customers in a machine optimised for turning process control.

MAKING PRODUCTION MORE COST EFFECTIVE

The optical shop floor measuring machine that helps you to produce more.
Speed up processes, track quality, reduce rejects and downtime.
The 90% of the measurement tools you use every day in a single solution with a fast return on investment.

DESIGNED FOR DAILY USE

The real image of the part shown by the software, combined with the large working area, gives a clear view of the condition of the part to be measured.
Retractable sensors during loading and unloading provide more space in the work area for even more comfortable access to the workpiece.
The ergonomic piece clamping lever has a considerably wide grip that allows both left-handed and right-handed to lock/unlock the workpiece without obstructing the view.

614 PRIMA

Quality without compromise

Maximum performance with a broad range of machines.

From 40 to 180 mm in diameter, and 300 to 2000 mm in length.

M304 TECHNO

M609 TECHNO

TECHNO Series

CUSTOMIZE YOUR RANGE

The availability of different models makes it possible to choose the measuring range that best suits the type of production.

THE MACHINE THAT IMPROVES PRODUCTIVITY

Operators are more independent during inspection, and tool offsets can be adjusted before parts become out of tolerance in order to reduce the amount of rejects produced.

DIMENSIONAL CONTROL DIRECTLY ON THE SHOP FLOOR

Each part produced by the CNC lathe or grinding centre can be easily measured by operators in seconds.

HIGHER PRODUCTIVITY EVEN IN SMALLER BATCHES

These systems facilitate part changeover, allowing you to switch from one lot to the next very quickly.

ONE MEASURING SYSTEM FOR MULTIPLE CNC LATHES

The same measuring machine can operate next to multiple machining centers, involving more than one operator.

HIGH RESOLUTION

Ultra-high resolution images to capture the smallest details.

M614 TECHNO

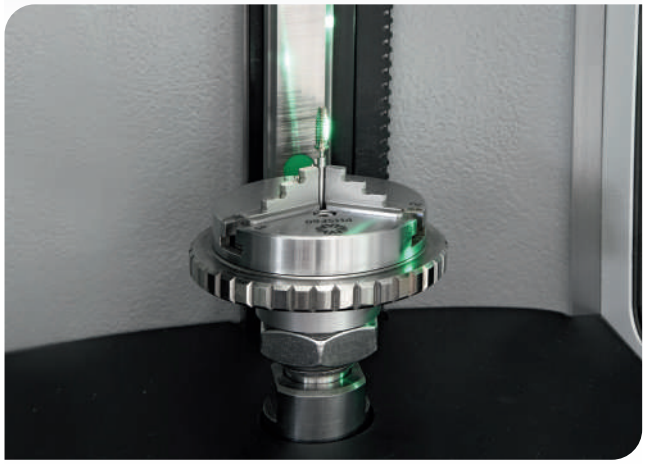
The best way to measure the smallest details

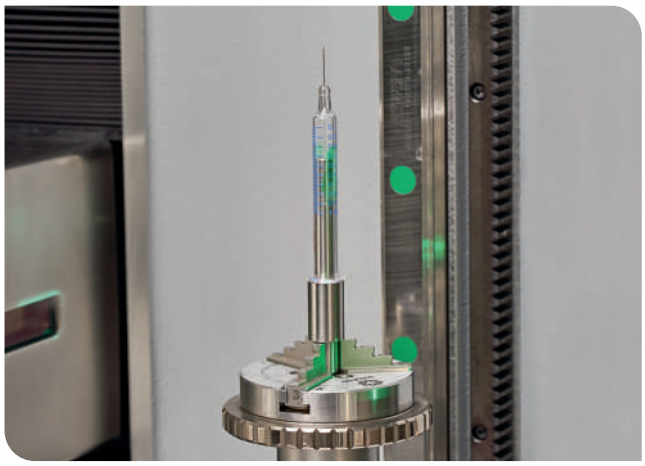
A specific solution for biomedical components, watch-making and micromechanics.

MTL X5
MTL X10

MTL X360

X Series





IDEAL FOR MICRO-COMPONENTS

The X series is specially designed to measure dental implants, biomedical components, watch parts and micro-mechanical parts.
The high resolution, allows detection of the smallest details.

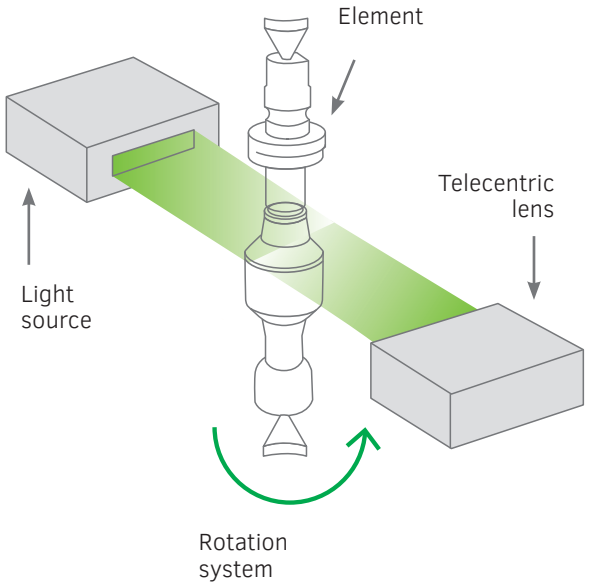
PROVEN BY THOSE WHO MANUFACTURE MINUTE PARTS

The open design facilitates direct access and handling of even the smallest and most complex cylindrical components.
As there are no openings or undercuts in the machine, there is no risk of small parts falling.

Fast
and accurate

Using manual tools, quality control can be prone to operator error.

A VICIVISION system combines the functions of profile projectors, micrometers and roundness gauges, eliminating human error in acquiring measurements, allowing operators to manage the data.
For this reason, carrying out measurements with a single tool means saving time, manpower and improving the accuracy of inspection.



Static measures:
- diameter
- length
- angle
- radius
- chamfer

Dynamic measures:
- coaxiality
- run-out
- circularity
- cylindricity
- taper

Threads:
- nominal diameter
- pitch diameter
- core diameter
- crests angle
- pitch
- roll dimension

Nuts:
- diameter
- asymmetry
- timing

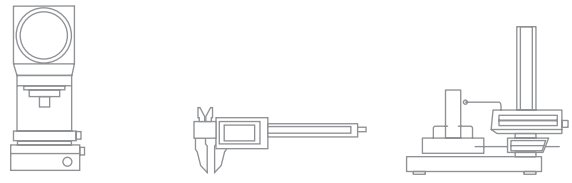
Profile measurements (optional):
- DXF comparison
- DXF export

Tactile measurements:
- total axial run-out
- undercuts
- keyways: depth, width, length

Special applications:
- camshafts
- crankshafts
- turbines

TRADITIONAL MEASUREMENT SYSTEM

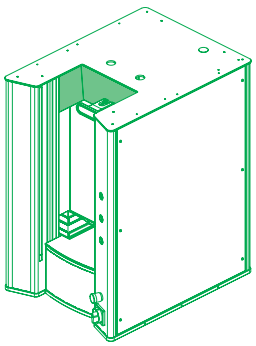
Measurement takes from 10 to 30 minutes.
Data is conditioned by human interference.
Difficult to use.
Requires data collection.



Projector | Manual tools | Roundness gauge

VICIVISION MEASUREMENT SYSTEM

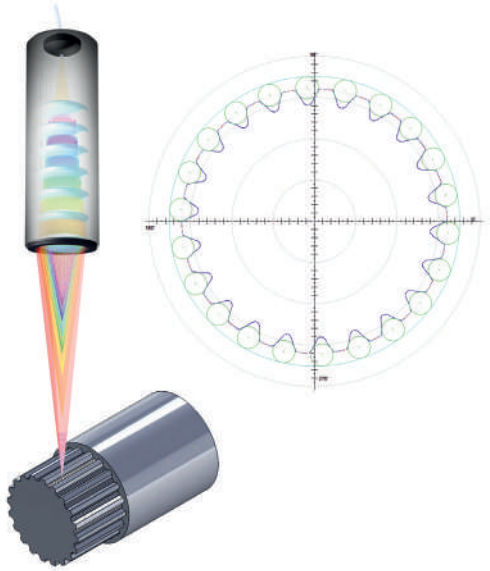
Measurement cycle time from 30 to 60 seconds.
No more human error.
Automatic cycle by pressing a button.
Automatic data collection.

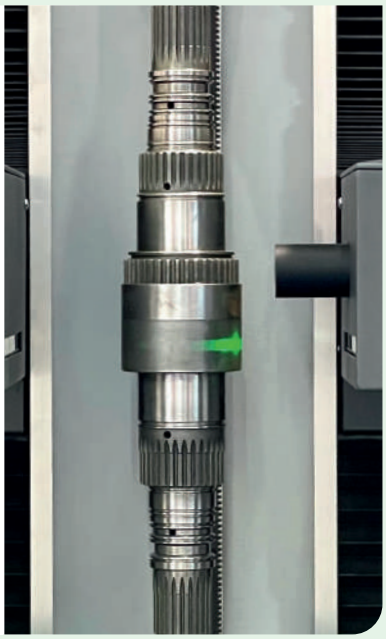


Additional functionality

VICIVISION's experience combines the speed of optical measurement with the additional capability of the touch probe and confocal sensor.

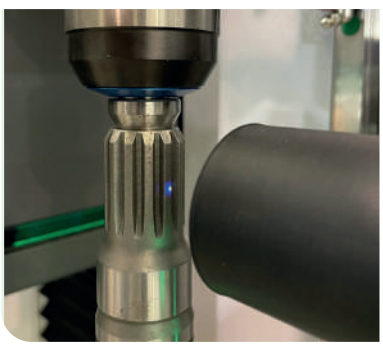
VICIVISION's Techno Series can be equipped with additional sensors to add more capabilities and functionalities.





Confocal

The confocal sensor makes it possible to check splins shafts very quickly. By reconstructing the entire profile, it is possible to determine the minor diameter, pitch diameter dimension and run-out on the pitch diameter.



SPLINED SHAFTS
Check the conformity of a splins shaft in a matter of seconds with the confocal sensor.

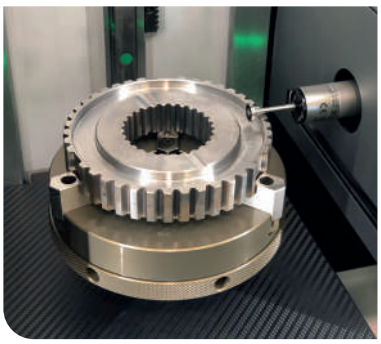
Touch probe

The touch probe for contact measurement offers more measuring capabilities on shafts and turned parts in the same measuring cycle, saving time, directly on the shop floor.

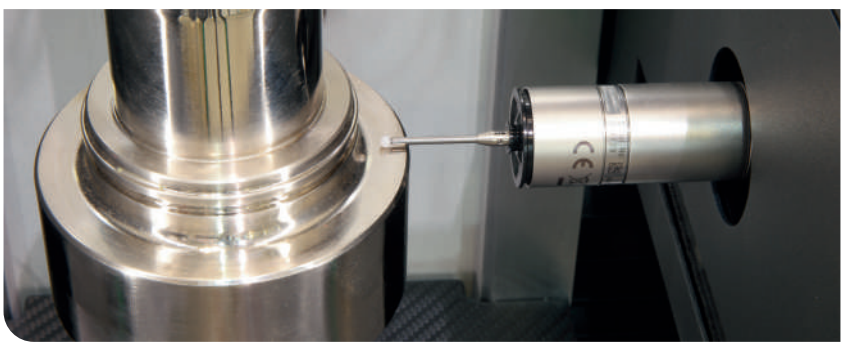
With a single machine it is possible to measure undercuts, total axial run-out and keyways.

The interchangeable styli adapt to different types of measurement and the quick qualification tool ensures measurement accuracy over time.

KEYWAYS
Measuring keys directly on the machine without having to removing the part.

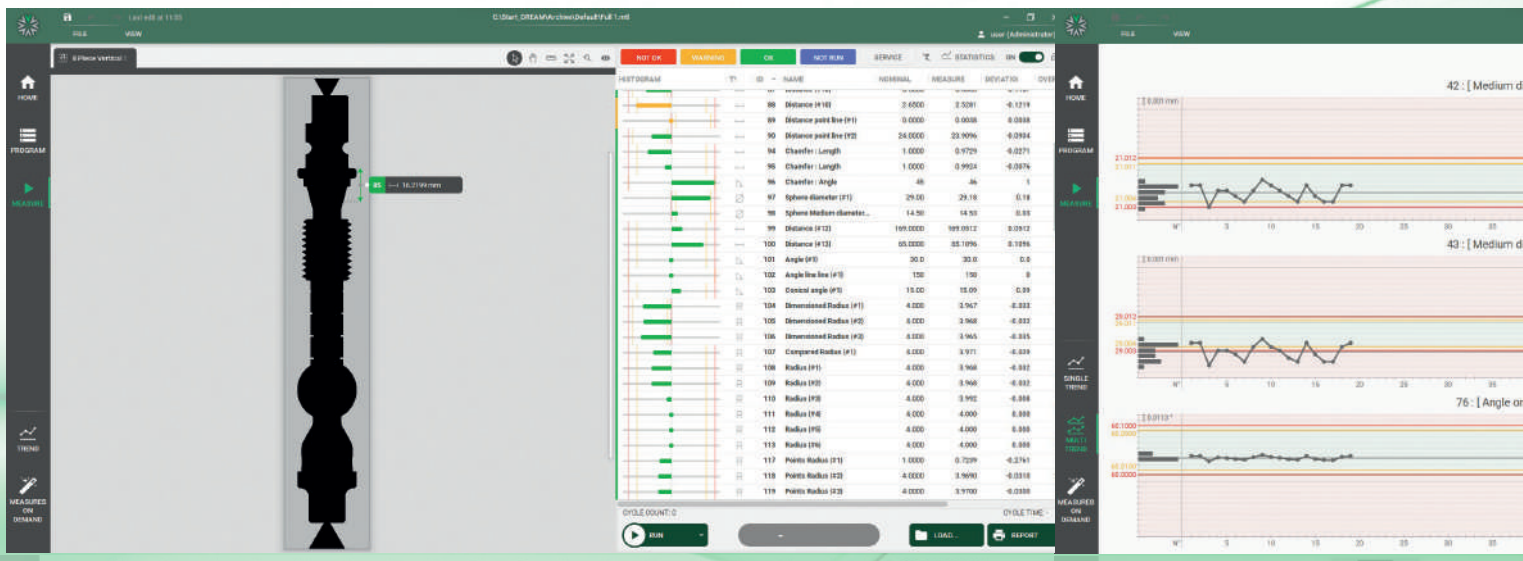


UNDERCUTS
Detect undercuts on the part with the use of the probe.



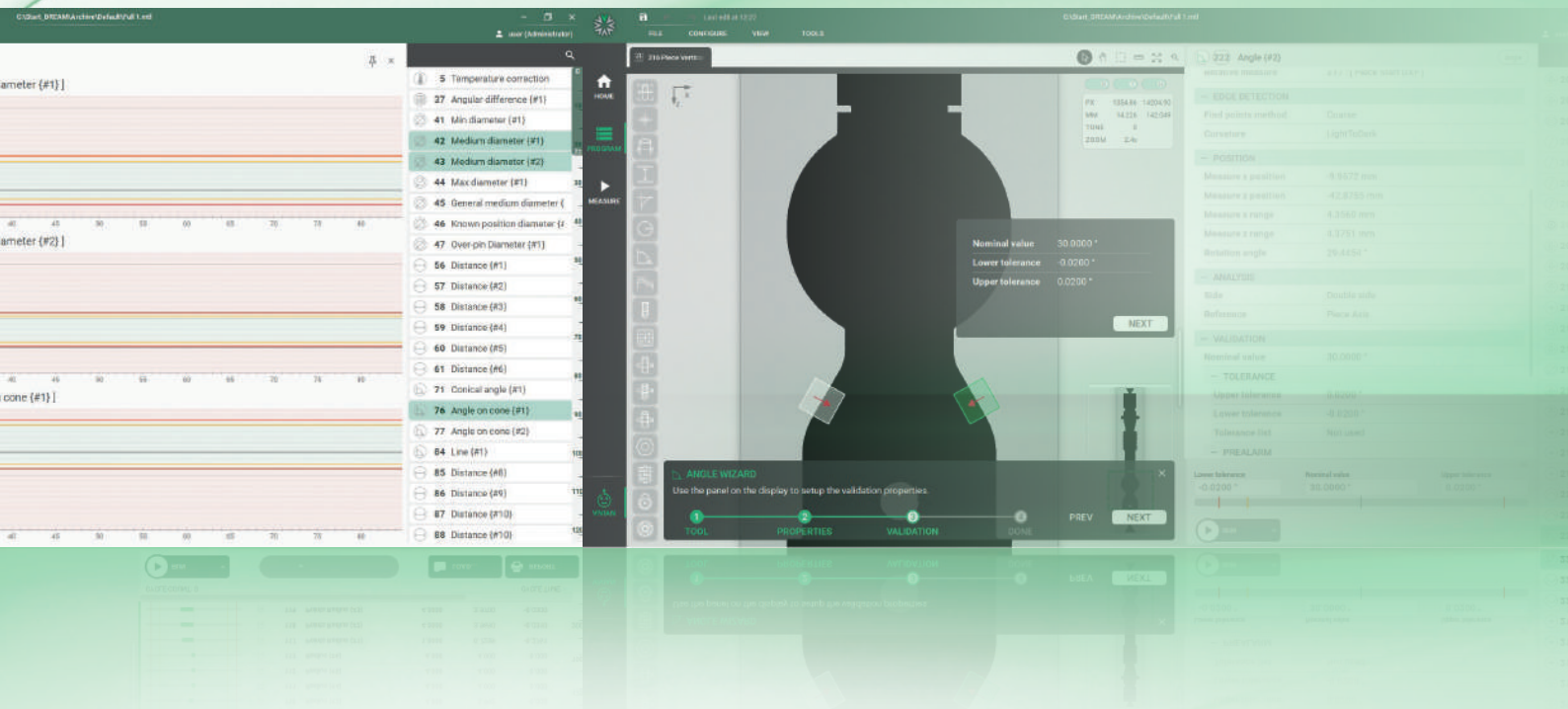
TOTAL AXIAL RUN-OUT
Measure total axial run-out with the correct method.

New VICIVISION software: reduce learning curve of programming



Simplified graphic interface

Forget the manual, with simplified steps and speed up programming.



SPC at a glance

Monitor the trend of several measurements simultaneously and in real time.

Act quickly with tool correction to eliminate reject parts.

Let VIVIAN guide you

VIVIAN, the virtual programming assistant, guides operators step by step through the creation of programmes and reduces the need for training.

With VIVIAN you cut down on learning time.

What is the next measure to be configured? Follow VIVIAN.

Increasing your production

An optical measuring machine for turned and ground parts, capable of taking measurements in a matter of seconds on the shop floor.

AUTOMATIC CORRECTION OF TOOL PARAMETERS

With the VICIVISION Tool Wear Compensation (TWC) function, the machine helps to correct the tool parameters, eliminating any human transcription error.

The TWC software reads the CSV files, processes them, calculates the offsets, then makes them available to a PLC via Profinet or Profibus connection, to implement automatic compensation.

The measuring machine, placed directly on the shop floor next to the CNC-lathe, collects data which can be output in a graphical PDF report and saved into a CSV file.

POSSIBILITY TO INTEGRATE AUTOMATION

VICIVISION measurement systems can be integrated into automated lines to control the entire production process. Robot loading is available through the use of profinet, profibus, digital I/O and other communication protocols.

Efficiency and speed on first article inspection

The first part of every batch must be measured to set the machining center.

Doing this on the shop floor rather than in the quality lab can save the company substantial time.

Integrated in CNC machining cells for more than 15 years.

LOAD A PROGRAM WITH THE QR CODE

Programs can be recalled more quickly via a QR code or barcode reader.

In addition, other information such as the name of the operator, processing cycle and batch can be quickly entered via this function.

A RANGE OF FIXTURES FOR ANY PART

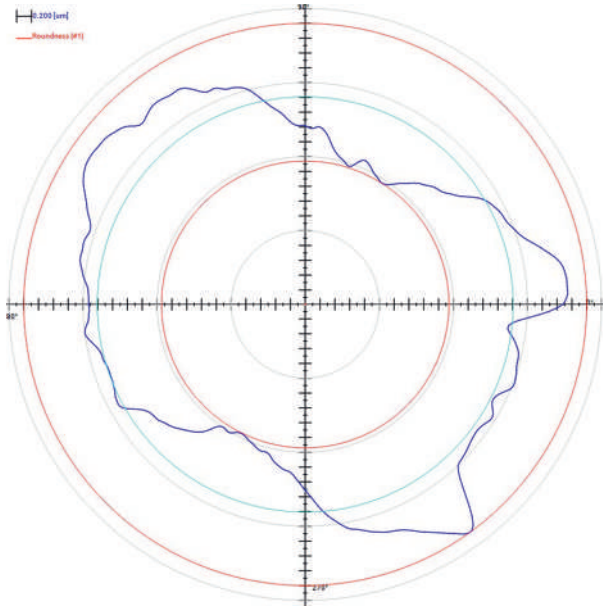
A whole range of accessories on morse 2 taper is available for many clamping requirements.

All types of clamping, such as tips of different sizes, tailstocks and chucks can be easily fitted and replaced.

In addition, VICIVISION measuring systems can be equipped with a pneumatic or electric tailstock to meet all automation requirements.

Measuring form defects on the shop floor

VICIVISION performs form measurements directly on the shop floor, where tools like roundness gauges might not withstand the environmental conditions.



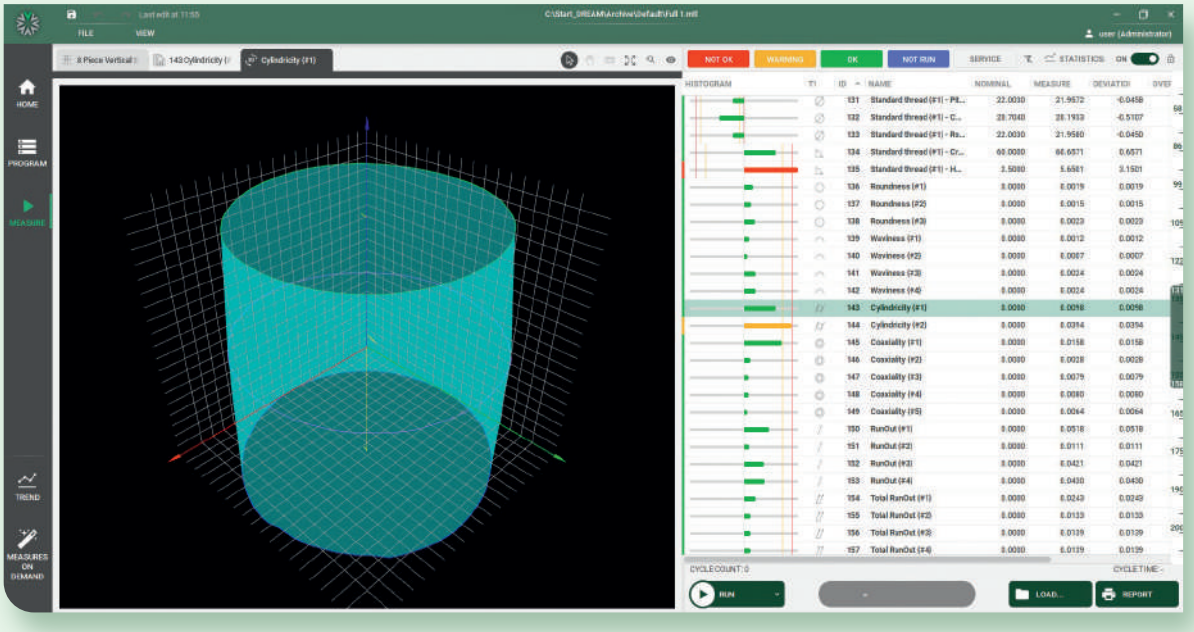
In a matter of seconds it is possible to take:

CIRCULARITY

AXIAL AND RADIAL RUN-OUT

COAXIALITY

CYLINDRICITY

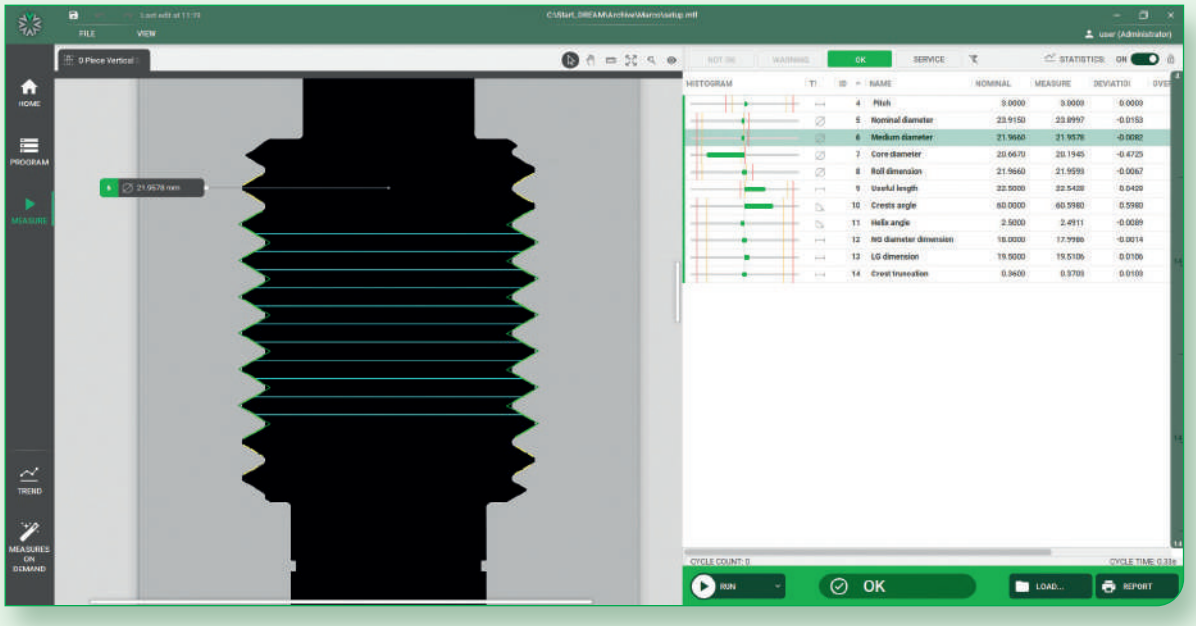


Thanks to multi-rotation and software filtering systems, it is also possible to obtain form measurements on threaded elements such as nuts and bolts.

ALL SOFTWARE TOOLS FOR THREAD MEASUREMENT

With MTL VICIVISION you can measure different types of threads in a matter of seconds.
For quick and easy programming of standard threads, the machine has preloaded tables with nominal values and tolerances.

Various measurements can be taken on the threads, such as pitch, major diameter, minor diameter, angle crest, helix angle and roll diameter.



THREADS, FROM CUTTING OR ROLLING?

VICIVISION has developed thread measuring tools to meet clients' needs. For each parameter it is possible to validate the average value of the full thread, or alternatively, each crest can be validated, highlighting which parts of the thread are within tolerance, borderline, or out of tolerance.

Individual crest analysis allows you to identify where your tooling is wearing. The validation of each thread crest is indicated for production by identifying rolling where roll wear can result in half the thread being in tolerance and the other half out of tolerance.

Special applications

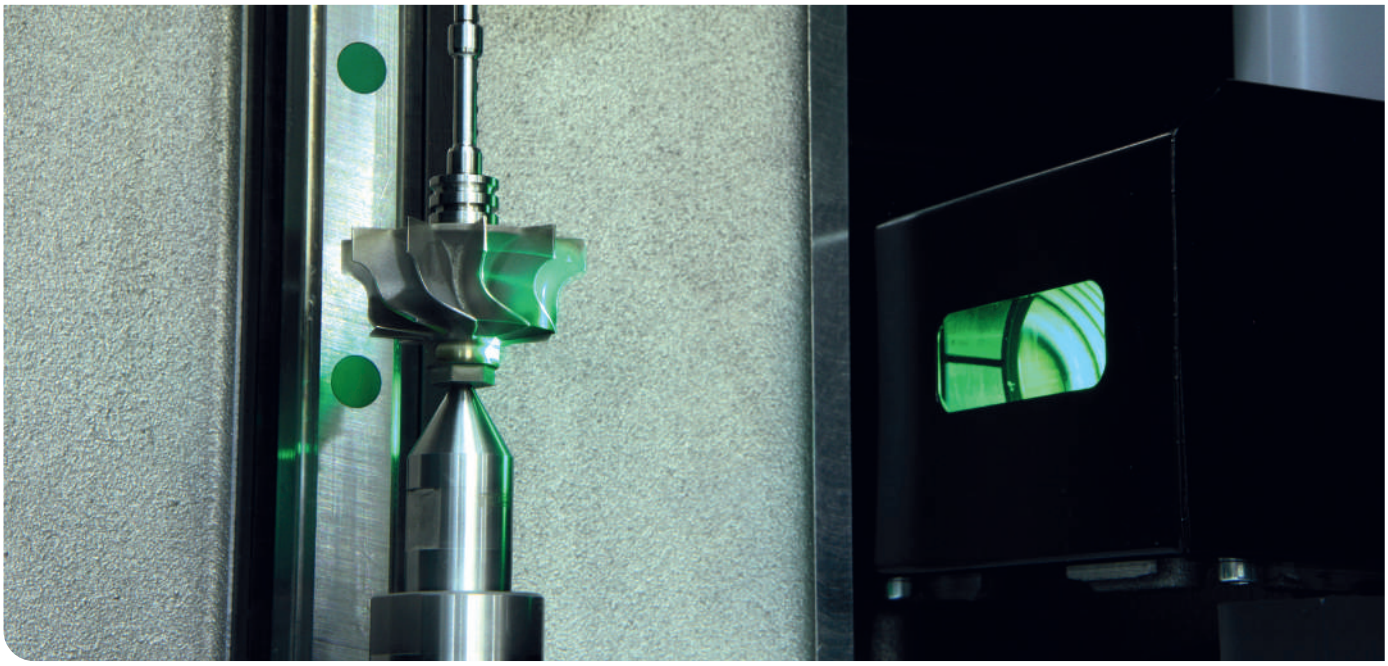
MEASURING CAMSHAFTS

The VICIVISION software has specific tools to measure camshafts. By simply importing data, such as the basic radius, the tappet type and the lift table, you obtain:

- confirmation of the basic radius;
- the maximum lift of the cam;
- deviation of the actual profile from the theoretical profile;
- deviation of acceleration;
- the run-out of the basic profile;
- phase angles.

MEASURING SHAFTS WITH ECCENTRICS

Dozens of solutions for crankshaft pin measurements including form measurements such as circularity, cylindricity, run-out and stroke calculation



MEASURING TURBINES

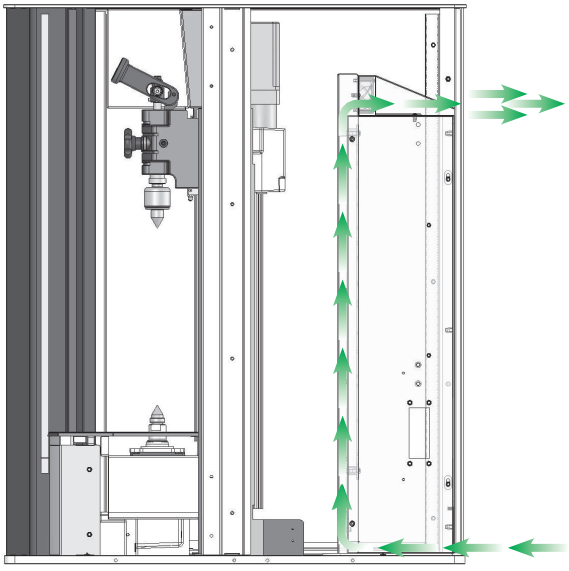
Specific functions make it possible to determine the position of the gauge diameter, dynamically, on the impeller. It is possible to compare the rotating profile with the respective DXF.

Everything needed to operate in a production environment

ON-BOARD GAUGE
The on board step-master guarantees the correct operation of the instrument when the temperature changes. This allows the machine to be used directly in the workshop.

IMPACT PROTECTION
Retractable sensors protect optics from damage during loading and unloading.

SIMPLE AND PRECISE CLAMPING
Tailstocks slides on prismatic guides guaranteeing precision that lasts.
Rack-and-pinion adjustment system for maximum convenience. Interchangeable clamping systems on morse 2 taper.



AIR FLOW
All VICIVISION machines feature the ‘Air flow’: forced air recirculation cooling system.
Unique in the industry, to ensure additional stability of the entire system.
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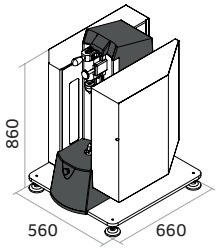
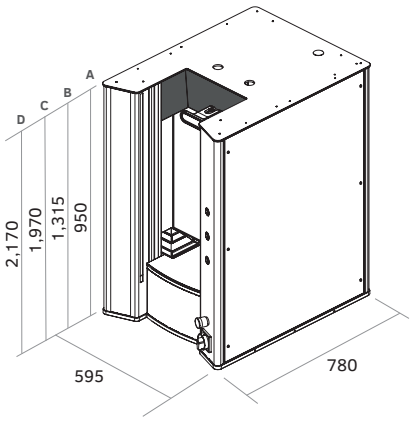
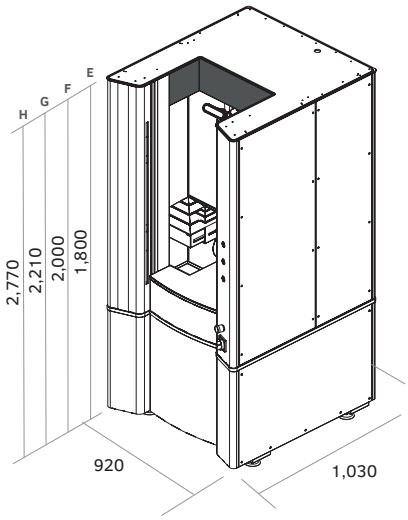


LAYOUT 1



LAYOUT 2

A B C D



LAYOUT 3

E F G H

	LAYOUT	Measuring field	Max. loadable sizes	Accuracy (1) Ø - L	Repeatability (2) Ø - L	Size LxDxH mm	Power supply		
							Voltage	Frequency	Nominal power
MTL X5	LAYOUT 1	100x16 mm	270x90 mm - 3Kg	1,5+D[(mm)/100)] µm 4+L[(mm)/100)] µm	0.4 µm / 3 µm	560x660x860 mm	230 V	50/60 Hz	1.73 A
MTL X10	LAYOUT 1	100x8 mm	270x90 mm - 3Kg			560x660x860 mm			
MTL X360	LAYOUT 2/A	300x60 mm	300x120 mm - 10Kg	1+D[(mm)/200)] µm 3+L[(mm)/200)] µm	0.3 µm / 1.2 µm	595x780x950 mm	230 V	50/60 Hz	1.73 A
306 PRIMA	LAYOUT 2/A	300x60 mm	300x120 mm - 10Kg	1,5+D[(mm)/200)] µm 3,5+L[(mm)/200)] µm	0.4 µm / 2 µm	595x780x950 mm	230 V	50/60 Hz	1.73 A
309 PRIMA	LAYOUT 2/A	300x90 mm	300x120 mm - 30Kg			595x780x950 mm			
314 PRIMA	LAYOUT 3/E	300x140 mm	300x240 mm - 30Kg			920x1030x1800 mm			
606 PRIMA	LAYOUT 2/B	600x60 mm	625x120 mm - 30Kg			595x780x1315 mm			
609 PRIMA	LAYOUT 2/B	600x90 mm	625x120 mm - 30Kg			595x780x1315 mm			
614 PRIMA	LAYOUT 3/F	600x140 mm	625x240 mm - 30Kg			920x1030x2000 mm			
M304	LAYOUT 2/A	300x40 mm	300x120 mm - 10Kg	1+D[(mm)/200)] µm 3+L[(mm)/200)] µm	0.3 µm / 1.2 µm	595x780x950 mm	230 V	50/60 Hz	1.73 A
M306	LAYOUT 2/A	300x60 mm	300x120 mm - 10Kg			595x780x950 mm			
M309	LAYOUT 2/A	300x90 mm	300x120 mm - 30Kg			595x780x950 mm			
M314	LAYOUT 3/E	300x140 mm	300x240 mm - 30Kg			920x1030x1800 mm			
M318	LAYOUT 3/E	300x180 mm	300x240 mm - 30Kg			920x1030x1800 mm			
M604	LAYOUT 2/B	600x40 mm	625x120 mm - 30Kg	1+D[(mm)/200)] µm 3+L[(mm)/200)] µm	0.3 µm / 1.2 µm	595x780x1315 mm	230 V	50/60 Hz	1.73 A
M606	LAYOUT 2/B	600x60 mm	625x120 mm - 30Kg			595x780x1315 mm			
M609	LAYOUT 2/B	600x90 mm	625x120 mm - 30Kg			595x780x1315 mm			
M614	LAYOUT 3/F	600x140 mm	625x240 mm - 30Kg			920x1030x2000 mm			
M618	LAYOUT 3/F	600x180 mm	625x240 mm - 30Kg			920x1030x2000 mm			
M906	LAYOUT 2/C	900x60 mm	925x120 mm - 30Kg	1+D[(mm)/200)] µm 3+L[(mm)/200)] µm	0.3 µm / 1.2 µm	595x780x2000 mm	230 V	50/60 Hz	1.73 A
M909	LAYOUT 2/C	900x90 mm	925x120 mm - 30Kg			595x780x2000 mm			
M914	LAYOUT 3/F	900x140 mm	925x240 mm - 60Kg			920x1030x2000 mm			
M918	LAYOUT 3/F	900x180 mm	925x240 mm - 60Kg			920x1030x2000 mm			
M1209	LAYOUT 2/D	1250x90 mm	1300x120 mm - 30Kg	1.5+D[(mm)/100)] µm 4+L[(mm)/100)] µm	0.4 µm / 3 µm	595x780x2000 mm	230 V	50/60 Hz	1.73 A
M1214	LAYOUT 3/G	1250x140 mm	1300x240 mm - 60Kg			920x1030x2205 mm			
M1218	LAYOUT 3/G	1250x180 mm	1300x240 mm - 60Kg			920x1030x2205 mm			
M2018	LAYOUT 3/H	2000x180 mm	2000x240 mm - 60Kg			920x1030x2770 mm			

(1) Maximum permissible error according to EN ISO 10360-7 specifically applied to shafts optical measuring machines, relating to artifacts certified by EN ISO 17025 accredited laboratory (plus uncertainty of calibration masters U(d): 0.5 µm and U(l): 1 µm), steel made, ground surfaces and standard shape. Environment condition 20+/-0.5°C, max gradient 0.5 K/h. Uncertainty estimated considering a coverage range K=2 corresponding to a confidence level of about 95%.

(2) Repeatability calculated over 10 repetitions on ground part surfaces

Vici & C S.p.A.
Via J. Gutenberg, 5 | 47822 Santarcangelo di Romagna (RN) | Italy
Tel. +39 0541-350411 | www.vicivision.com | sales@vici.it