



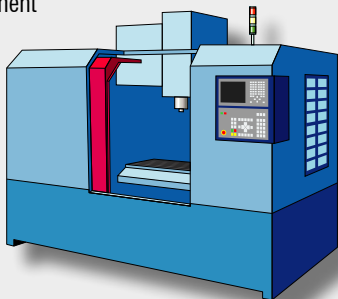
**PROBE SYSTEMS
FOR MACHINE TOOLS**

MARPOSS

THE ADVANTAGES OF USING MARPOSS SYSTEMS ON MACHINE TOOLS



more efficient production processes
greater production quality and precision
higher productivity
greater gain improvement



reduced machine stoppage time
less down time
fewer rejects

The MIDA line of products has enabled Marposs to increase quality standards, achieving production targets with:

- maximum flexibility
- unrivalled quality
- reduced times

ACCURATE MEASUREMENTS INCREASE EFFICIENCY, REDUCE WASTE AND DOWN TIMES

Using MARPOSS measurement probes means **improving** production processes, **increasing** the quality and precision of parts and **reducing** rejects and machine down time.

Part and tool set-up and zeroing operations performed are without mistakes, thanks to tool dimension and part position automatic compensation. Set-up and programmed maintenance times are significantly reduced, helping to keep machine down time to a minimum.

The use of probes in part measurement and tool dimension checking allows an automated, quick and safe process. The results obtained are more accurate and eliminate the possibility of operator errors. Carrying out checks while mechanical processing is in progress provides information in real-time, avoiding delays caused by having to dismantle the component then carry out checks manually in dedicated measurement stations.

The MARPOSS measurement software can be used to call up dedicated programs for the individual parts to be checked, giving maximum performance in the simplest possible way.

Marposs has developed the Mida™ line of products to perform mechanical part measurement and inspection, tool checking and machine condition monitoring on machine tools.

Mida™ systems feature various signal transmission options, enabling Marposs to supply the best application for all measuring requirements on machine tools.

Mida™ line products are designed to withstand the harshest conditions in the machine environment whilst at the same time guaranteeing the highest measuring precision.

	Part probing	Tool check
Machining centres	Touch probe/bore gauge radio (wireless)/optical transmission	Touch probe/laser radio (wireless)/optical transmission
Milling machines	Touch probe radio (wireless)/optical transmission	Touch probe/laser radio (wireless)/optical transmission
Lathes Turning centres	Touch probe radio (wireless)/optical transmission	Arm with touch probe Laser
Glass / marble working machines	Touch probe radio transmission	Laser
Sharpeners	Touch probe cable transmission	Touch probe cable transmission
Grinding machines	Touch probe cable transmission	Touch probe cable transmission

The following tables identify which product is most appropriate for your application

PART PROBING

	Small	Medium	Large
Machining centres	VOP40 VOP40P	VOS / WRS / WRG WRP60P	VOS / WRS / WRG WRP60P
Milling machines	VOP40 VOP40P	VOS / WRS WRP60P	VOS / WRS WRP60P
Lathes Turning centres	VOP40L		WRS / WRP60P
Glass / marble working machines	WRS / WRP60P		
Sharpeners	T25P		
All machines	Software cycles		

TOOL CHECK

	Contact	Contactless
Machining centres	TLS / TS30 TS30 90° / VOTS WRTS	MIDA LASER TBD and TBD HS VTS
Milling machines		
Lathes Turning centres	T18 / A90K MIDA ARMS	
Glass / marble working machines	TS30 / TS30 90° / VOTS	
All machines	Software cycles	



HARD-WIRED HIGH PRECISION PROBE

Hard-wired transmission probe designed for use with sharpeners and gear wheel grinders. Offers exceptional performance, making it ideal for measurements on highly complex, three-dimensional surfaces, such as cutting tools and gear teeth



- Exceptional repeatability $\leq 0.25 \mu\text{m}$ (2σ)
- Multidirectional repeatability, irrespective of touch direction
- Zero pre-stroke
- Performance is ideal even with long styli
- Suitable for use even in small machine environments thanks to ultra-compact size

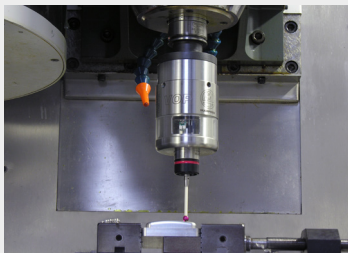


VOS

MULTI-CHANNEL OPTICAL TRANSMISSION PART PROBING SYSTEM

Ideal for machining centres and
milling machines

- 63 mm diameter
- Long transmission range, up to 6 m
- Wide transmission angle, 110°
- Long operating autonomy, up to 700 hours of continuous use
- Maximum compatibility with all previously installed systems
- "Multiprobe" mode, up to 4 probes in the same machine



- For dual spindle applications it is possible to use 2 optical probes simultaneously
- Compact or modular system for maximum flexibility.

VOP40

COMPACT PART PROBING SYSTEM WITH MODULATED OPTICAL TRANSMISSION

VOP40 is the solution for part probing systems with optical transmission for small or medium-sized milling machines and machining centres. It features compact size with an integrated gauging system.



- Compact dimensions (Ø40 x L50 mm)
- Good operating autonomy, over 1000 hours of continuous use
- For dual spindle applications it is possible to use 2 optical probes simultaneously
- Multiprobe mode, up to 4 probes on the same machine
- Maximum compatibility with all previously installed systems
- Long transmission range - up to 6 m





HIGH PRECISION TOUCH PROBE WITH MULTI-CHANNEL OPTICAL TRANSMISSION

VOP40P is the touch probe system with optical transmission for use on milling machines and 5-axis machining centres for extremely precise machining. It combines compact design with incredible measuring performance.

- Compact dimensions (Ø40 x L50 mm)
- Unidirectional repeatability $\leq 0.25 \mu\text{m}$ (2σ)
- Long operating autonomy, over 1000 hours of continuous use
- For dual spindle applications it is possible to use 2 optical probes simultaneously
- Multiprobe mode, up to 4 probes on the same machine



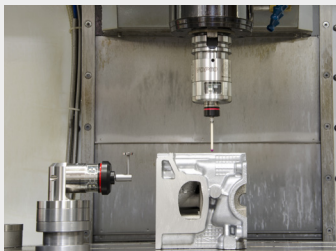
Twin Probe

PART PROBING AND TOOL CHECKING SYSTEM WITH A SINGLE RECEIVER

Efficient part probing and tool checking system for machining centres and milling machines

- Available with radio or optical transmission
- Up to four probes with a single receiver
- No cables in the machine
- More space available on the table
- Modulated optical transmission immune to optical interference
- Radio transmission at 2.4 GHz

Pairing the WRTS (radio) and VOTS (optical) tool setter probes with the respective WRP and VOP spindle probes creates a complete part and tool checking system with a single interface.

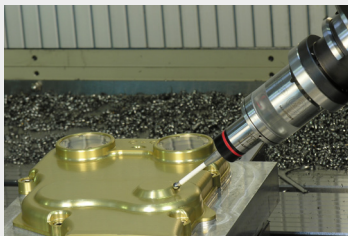




RADIO TRANSMISSION PART PROBING SYSTEM

Designed for use on all medium and large machine tools, including 5 axis applications

- The WRP45 version features reduced dimensions - 45 mm diameter for use on multiple axis milling machines
- WRP60 version - 60 mm diameter, for use on large MC and lathes
- 2.4 GHz radio transmission frequency for ranges of up to 15 m
- Long transmission range - up to 15 m
- Exceptional operating autonomy, up to 1500 hours in continuous use



- Modular system in order to satisfy a wide range of requirements
- 79 channels 4 sub-channels provide incredible operating quantity in the same environment



HIGH PRECISION TOUCH PROBE WITH MULTI-CHANNEL RADIO TRANSMISSION

This is the radio transmission touch probe ideal for use on large milling machines and 5-axis machining centres for extremely precise machining operations. It guarantees high precision and measurement repeatability.

- Unidirectional repeatability $\leq 0.25 \mu\text{m}$ (2σ)
- For dual spindle applications it is possible to use 2 radio probes simultaneously
- Multiprobe mode, up to 4 probes on the same machine

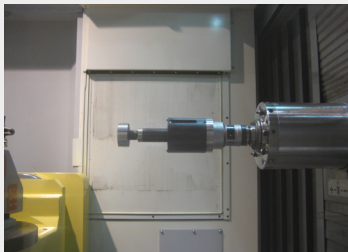
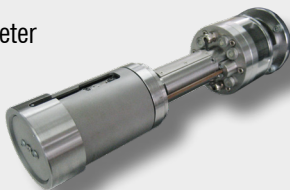




BORE GAUGES WITH RADIO TRANSMISSION

Fast, accurate and simple bore inspection on machining centres.

- Wide range of dimensions, diameter can be varied depending on the application
- 2.4 GHz radio transmission frequency
- Long transmission range, up to 15 m
- Multi-transducer system for different types of measurements
- Use of multiple bore gauges on same machine, with a single receiver



- Efficient anti-collision recoil system
- It is possible to combine multiple WRG bore gauges and WRS touch probes on the same machine, controlled by a single receiver

Touch Probes - T Series

THE IDEAL PROBE LINE FOR PRISMATIC SURFACES

Touch probes designed for use on machining centres, grinders and lathes. Their excellent unidirectional repeatability means they are perfect for use with low-complexity (typically flat) surfaces.

- Excellent repeatability $\leq 0.5 \mu\text{m}$ (2σ)
- Performance is ideal even with long styli
- Immunity to vibrations and rapid machine accelerations



- Extensions for reaching hard to access points
- Compatibility with all Marposs modular systems for maximum operating flexibility

Touch Probes - TT Series

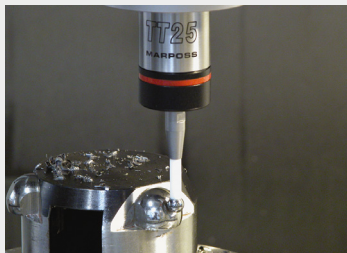
THE IDEAL PROBE LINE FOR COMPLEX SURFACES



Touch probes designed for use on milling machines and tool sharpeners. Their high multi-directional repeatability means they are ideal for performing measurements on highly complex (typically three dimensional) surfaces

- Repeatability $\leq 1 \mu\text{m}$ (2σ)
- Multidirectional repeatability, irrespective of touch direction
- Excellent performance with complex and heavy styli

- High overstroke for increased probe protection
- Extensions for reaching hard to access points
- Compatibility with all Marposs modular systems for maximum operating flexibility



VOP40L

TOUCH PROBE SYSTEM WITH MULTI-CHANNEL OPTICAL TRANSMISSION FOR LATHES

VOP40L is the touch probe system ideal for use on lathes and turning centres of any size, thanks to its compact design.



- Compact dimensions (Ø40 x L80 mm)
- Unidirectional repeatability $\leq 0.5 \mu\text{m}$ (2σ)
- Long operating autonomy, over 1000 hours of continuous use
- Multi-turret applications: VOP40L introduces the possibility of installing two applications on the same machine by permitting 2 probes to be used simultaneously
- Each application can support up to 4 probes controlled sequentially

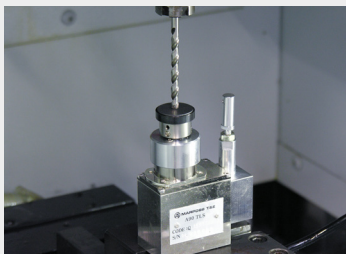
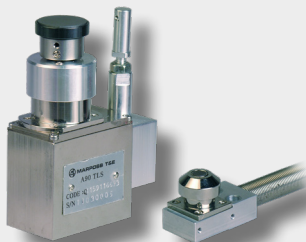


TLS

LINE OF PROBES FOR CONTACT TOOL CHECK

Compact, hard-wired applications for checking tools on machining centres. Perform length measurements, wear compensation and tool breakage checks.

- High repeatability
 $\leq 1 \mu\text{m}$ (2σ)
- Extremely reliable
- Immunity to machine vibrations

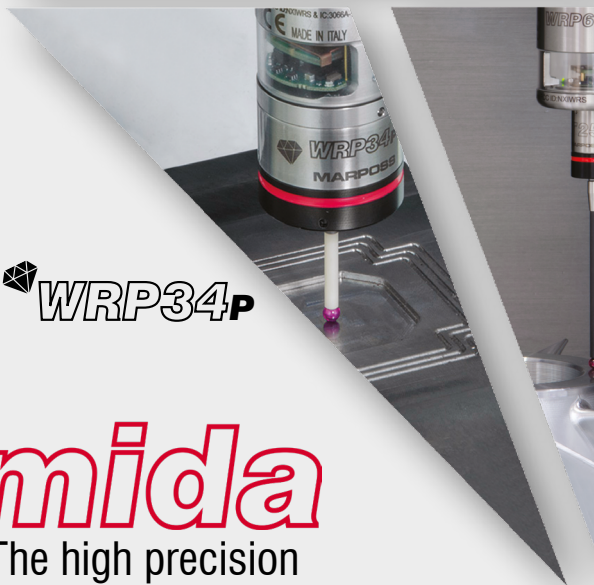




VOP40P



WRP34P



mida

The high precision
product range



WRP



 **T25P**



 **VTS**

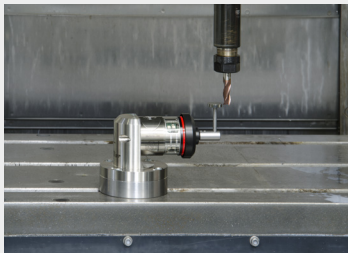
P60P

TS line

PROBES FOR TOOL CHECK ON VERTICAL MACHINING CENTRES

TS (Tool Setting) Line is a line of applications for pre-setting and checking tools in machining centres. It can be used for: tool integrity check, tool length and diameter measurement, tool wear compensation.

- Includes cable, optical and wireless transmission systems
- Unidirectional repeatability $\leq 1 \mu\text{m}$ (2σ)
- Degree of protection IP67
- Complete line
- Also suitable for small tools



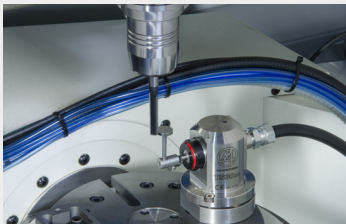
TS30 90°

PROBE FOR TOOL PRE-SETTING ON MACHINING CENTRES

Compact touch probe that operates while the tool is rotating at the operating speed with optimum repeatability ($\leq 1\mu\text{m}$, 2σ).

It allows tool integrity check, length and diameter measurement, tool wear compensation, monitoring of tool breakage.

The TS30 90° three-step alignment system is designed to make installation quick and easy, allowing correct positioning of the base, the probe body and the stylus. Overall, all three steps can be carried out in less than 5 minutes, saving a lot of time.



Mida Laser P

CONTACTLESS LASER TOOL CHECKING SYSTEM

Mida Laser P is the laser line used for pre-setting, rotating tool length and diameter measurement, identification, wear compensation, check of integrity, tool breakage and thermal drift compensation for machine axes

- Available in several versions, stand alone and modular
- Excellent repeatability $\leq 0.2 \mu\text{m}$ (2σ)
- Minimum tool diameter measureable $30 \mu\text{m}$
- Laser beam focused to guarantee maximum measuring precision, even with coolant presence
- Exclusive protection system with patented Air Tunnel Effect (ATE)
- Tool cleaning kit integrated in the machine table support





COMPACT CONTACTLESS VISION TOOL CHECKING SYSTEM

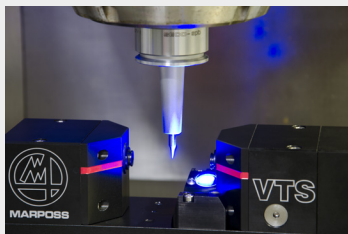
VTS - Visual Tool Setter is a contactless metrology system based on image processing technology. The excellent measuring performance makes VTS ideal for

checking tools used in top precision sectors where machining quality requires constant dimension checks.

The compact size also makes it suitable for working areas in small machines.



- Measurement independent of the tool geometry
- Diameter measurable: from 10 μm to 40 mm
- Repeatability $\leq 0.2 \mu\text{m}$ (range)
- Diameter, length, TIR and radius of curvature in a single positioning operation
- Easy to use Graphical User Interface (GUI)
- Double protection of the lens-video camera unit



TBD / TBDHS

CONTACTLESS LASER TOOL BREAKAGE CHECKING SYSTEM

TBD (Tool Breakage Detector) and TBD HS (High Speed) are laser devices that use reflection to check tool breakage. TBD HS operates at extremely high tool rotation speed.

- Extremely fast and sensitive
- Able to check the widest range of tools (min. diameter 0.2 mm)



- Can detect tools at a range of distances from 0.3 to 2 m
- TBD operates at all rotation speeds multiples of 200 and 1000 rpm, up to 5000 rpm; TBD HS operates at high speeds (multiples of 1000 and 10000 rpm, up to 80000 rpm).

A90k

LINE OF PROBES FOR CONTACT TOOL CHECKING FOR LATHES

Compact applications for performing tool length measurements, offset calculations, wear compensation and tool breakage checks on lathes. They are equipped with a contact for each touch direction.

- Repeatability $\leq 1 \mu\text{m}$ (2σ)
- Transmission via cable
- Extremely reliable
- Immunity to machine vibrations
- High protection against hostile machine environments

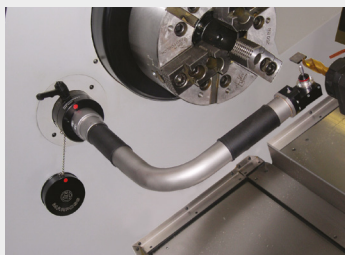


Mida Set

LINE OF ARMS FOR CONTACT TOOL CHECKING ON LATHES

The line of removable arms for pre-setting tools on lathes.

- Repeatability $\leq 5 \mu\text{m}$ (2σ)
- Wide range of sizes available
- Takes up minimum space when not in use



Mida Tool Eye

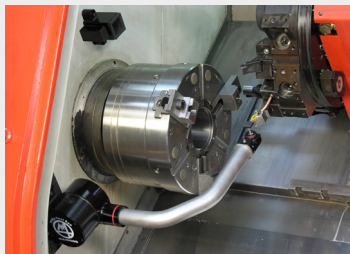
LINE OF MANUALLY OR ELECTRICALLY OPERATED ARMS

The line of fixed, manually or motor lowered arms for tool pre-setting, length measurements, tool breakage checks, zeroing and offset correction

- Repeatability $\leq 5 \mu\text{m}$ (2σ)
- Wide range of sizes

Motor operated version:

- Can be used to perform automatic measurement cycles
- Drastically reduces tool checking times
- Correction of thermal drift



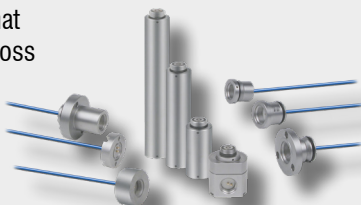
- When not in use, the probe is placed in a special box that guarantees optimum protection

Styli and accessories

ACCESSORIES FOR APPLICATIONS WITH TOUCH PROBES

A wide range of accessories that increase the versatility of Marposs probes in order to satisfy every possible machine requirement or customer specification:

- Various different stylus shapes and lengths
- Wide range of adapters, extensions and supports



PART AND TOOL CHECK SOFTWARE PACKAGES

part and tool contact

locking systems, for

the tool. They are

fully and

systems

mining

Measuring cycles are available for the following applications:

- Part size check
- Tool zero-setting/measurement with Mida touch probe styli or with Mida Laser

mida Software

The table indicates the availability of measuring cycles for each CNC model.
For CNC not listed below, please contact your nearest Marposs office.

	FANUC AND SIMILAR ●	SIEMENS 840D-810D-828D	SIEMENS 840C	SIEMENS 802D	MAZATROL	HEIDENHAIN	FAGOR 8050-8070	SELCA 3000-4000	D.ELECTRON Z32	ECS SERIES WIN	OKUMA
MACHINING CENTRES											
Part probing	√	√	√	√	√	×	×	×	×	×	
3D shape inspection	√	√				√		√	√		Δ
Contact tool setting	√	√		√		×	×	×	×	×	
Laser tool setting	√	√		√	√	√	√	√	√	√	√
LATHES AND TURNING CENTRES											
Part probing	√	√	√	√	√		×				√
Contact tool setting	√	√		√			×				
Laser tool setting	√	√			√						

Legend:

√ = available

× = already available in CNC original software

Δ = available only for THINC CNC model

● = Brother, Haas, Makino, Mitsubishi, Yasnac

MACHINING CENTRES	Part probing	<ul style="list-style-type: none"> • Protected positioning • Calibration • Bore and shaft measurement • Two bores/shafts measurement • Three/four bores/shafts measurement • Pocket and shoulder measurement • Single surface measurement • Inner-outer corner positioning • Angle measurement • Probe orientation for multi-axis applications • Stock measurement
	Contact tool setting	<ul style="list-style-type: none"> • Calibration, measurement and integrity inspection on tool length and tool diameter
	Laser tool setting	<ul style="list-style-type: none"> • Calibration • Tool length and radius axial and non-axial measurement • Checking for axial tool breakage • Cutting edge integrity check • Cutting edge profile integrity check • Passing tool axial breakage check • Cutting edge radius measurement • Pre-setting for disk milling cutter and boring bar • Thermal drift compensation • Circular sector check
LATHES AND TURNING CENTRES	Part probing	<ul style="list-style-type: none"> • X axis and Z axis calibration • Protected positioning • X axis and Z axis single touch measurement • Pocket and shoulder measurement • Diameter measurement • Bore and cylinder groove measurement • Centre measurement with C axis movement
	Contact tool setting	<ul style="list-style-type: none"> • Stylus calibration • Automatic tool measurement
	Laser tool setting	<ul style="list-style-type: none"> • Pre-setting for standard tools • Pre-setting for neutral tools • Pre-setting for threading tools • Pre-setting external and internal groove tools





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