mida

PROBING SYSTEMS
FOR MACHINE TOOLS

MARPOSS

The Company

Marposs was established in 1952 by Engineer Mario Possati. Since the beginning, Marposs has produced standard and custom systems for industrial machined part dimension, geometry and surface quality measurement and control applications. Marposs engineers work with both end users and machine tool makers, from the development stage of a project through implementation and long-term service support. Application solutions are obtained with standard or engineered products and cover all requirements from the immediate control of the machine tool, to the final inspection of the finished parts and to the collection and statistical interpretation of the measurement data.

Marposs products are designed for machine tool and measurement station manufacturers and end users in the machine tool manufacturing, automotive sector and associated sub-contractors, aerospace, bearings, glass, electrical motors, gears, energy, electronic and high-tech, biomedical sectors.

Marposs adheres to Quality principles and is committed to the continuous improvement of procedures and methods, as well as the adoption of new methods most suitable for the analysis, engineering, production, control and assistance of all its products and services.

Marposs' expertise allows its customers to reach their goals of product quality, efficiency, flexibility, productivity, reliability and maintainability of the manufacturing process, regardless of their company size.

The company has become a world leader in measurement technology by offering its customers a combination of advanced products, market knowledge and commitment to long-term global partnerships.

After the year 2000 it began a program of acquisitions of solid, well-structured companies, each able to supply a top quality product in its field.

All of these companies were leaders in their fields, but operated within local areas; joining Marposs group, they benefit greatly from the worldwide presence of Marposs, with its widespread sales and service network able to reach customers anywhere.

On the other hand, thanks to these acquisitions, Marposs expands the range of products and solutions, thus enhancing the capability to satisfy customers' needs.

MARPOSS

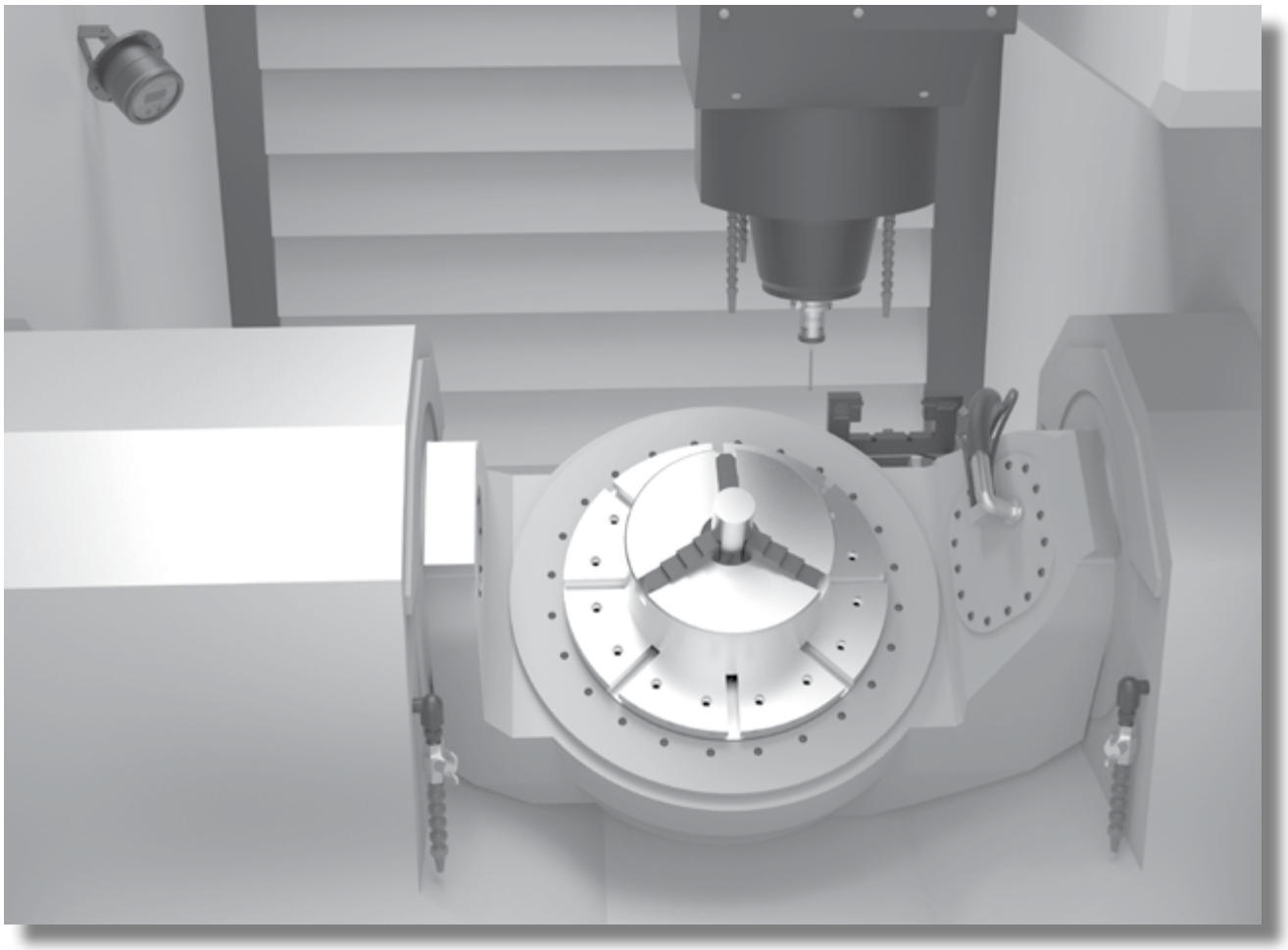
ACCURATE MEASUREMENTS INCREASE EFFICIENCY AND REDUCE REJECTS AND DOWN TIME

Using MARPOSS measurement probes means perfecting the machine tool, and hence improving production processes, increasing the quality and precision of parts and reducing rejects and machine down time.
In-machine measurements using MARPOSS products guarantee automatic, fast, accurate part and tool dimensional checks. By performing the check during the mechanical machining process it is possible to obtain real-time dimensional information under the effective working conditions. This means that the results are more accurate than those obtained by outside machine measurement methods, and eliminates the risk of manual errors.

With the MARPOSS Mida range of products it is possible to monitor the entire production process, thanks to the four measurement phases:

1. **part positioning** is used to define its alignment and origins, thus ensuring that the machining process produces the desired tolerances;
2. **tool pre-setting** involves transferring the tool geometry information automatically to the machine table, this eliminates the risk of operator errors and guarantees the quality of the cut, since all the measurements are performed within the machine area;
3. the **tool check** is carried out in order to detect any wear on the tool during the machining process, by continuously monitoring its dimensions; this guarantees that the performance level remains constant throughout the process, resulting in less rejects and improved machine productivity;
4. since the **part measurement** is performed inside the machine, it saves time and permits users to carry out any reworking that may be necessary without having to reposition the part.

ADVANTAGES OF USING MARPOSS SYSTEMS ON MACHINE TOOLS



Consult the following table to identify the most suitable product for your application:

	Part probing			Tool checking	
	Small	Medium	Large	Contact	Non contact
Machining centres	VOP40 VOP40P	VOS / WRS / WRG WRP60P	VOS / WRS / WRG WRP60P	TLS / TS30 TS30 90° / VOTS WRTS	MIDA LASER TBD and TBD HS VTS
Milling machines	VOP40 VOP40P	VOS / WRS WRP60P	VOS / WRS WRP60P		
Lathes Turning centres	VOP40L		WRS / WRP60P	T18 / A90K MIDA ARMS	
Glass/marble working machines	WRS / WRP60P			TS30 / TS30 90° / VOTS	
Sharpeners	T25P			-	-
All machines	Software cycles				

DATA TRANSMISSION TYPE

Radio transmission. 

Optical transmission 

Cable transmission 

TYPE OF MACHINE THE PROBES ARE USED ON

Machining centres and milling machines 

Lathes 

Grinders 

CONTENTS

MEASUREMENT ERROR

MEASUREMENT PRECISION

The Marposs **WRP60** radio frequency system automatically detects axis position to enable part inspection on large, 5-axis milling machines and machining centers and applications producing deep parts. You get improved quality and reduced scrap. **Marposs means precision.**

www.marposs.com

MARPOSS

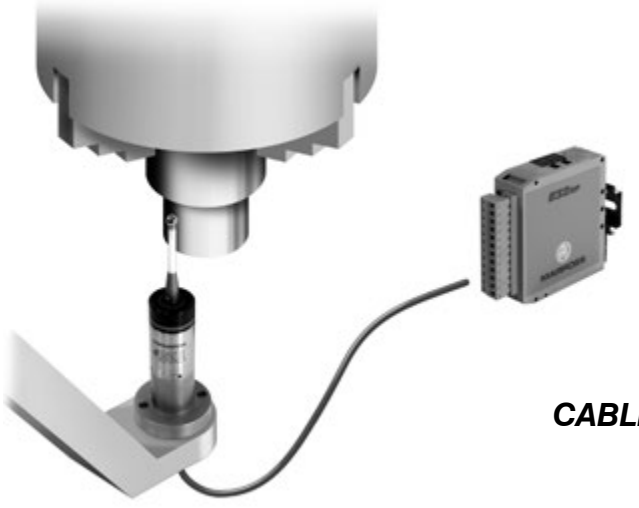
YOUR GLOBAL METROLOGY PARTNER

PART INSPECTION

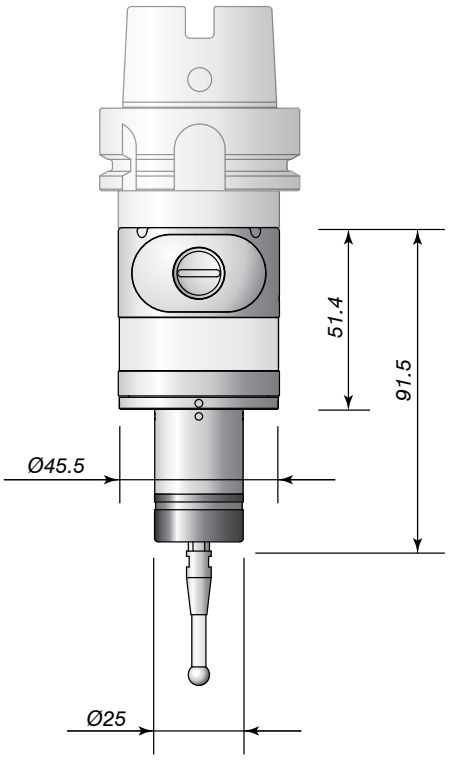
The world of machine tools is in continual evolution. The need to obtain increasingly high quality machined products drives the request for high performance technologies, capable of exercising complete control over the production process.
Marposs probes represent the best solution for optimising working times and quality.
The **optical transmission** systems offer an excellent compromise between working time and quality for small and medium scale machining centres, milling machines and lathes.
Large scale machining centres, featuring 5 axes, and large turning centres require more robust transmission technologies, which are obtained by using **radio transmission**.
Lastly, the **cable transmission** systems are ideal for part checks on grinding machines.

OPTICAL TRANSMISSION

RADIO TRANSMISSION



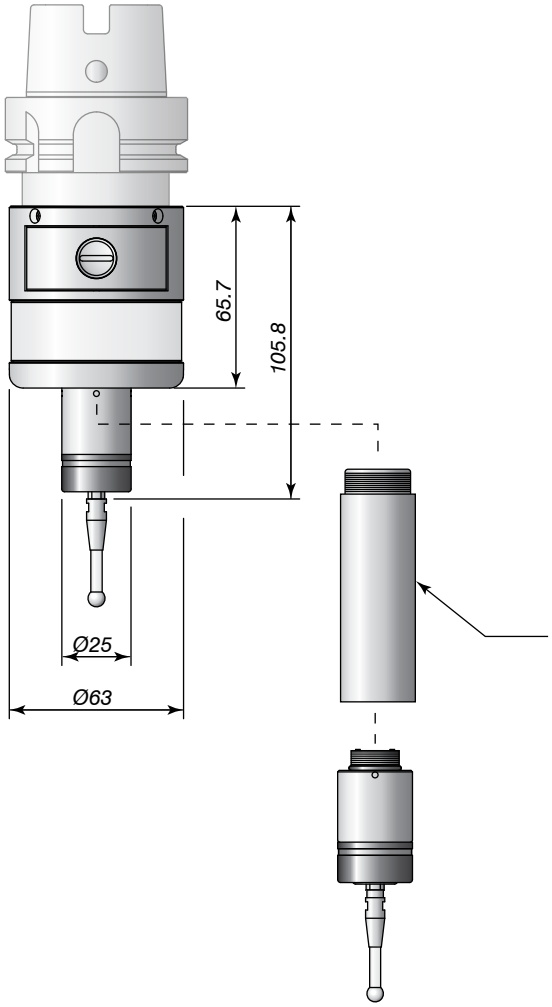
CABLE TRANSMISSION



The WRP45 radio transmission touch probe is ideal for use on medium and large scale, 5 axes machining centres and milling machines. The radio technology is based on a working frequency of 2.4 GHz and allows a large number of probes to the used in the same working environment.
Its modular design means that pre-configured packages are available for the various types of application with T25, TT25 and TT30 touch probes.
It is used together with the WRI integrated interface receiver.

Probe	Receiver	Cable	Accessories	Kit
 **WRP45+T25** **WRP45+TT25** **WRP45+TT30**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS STYLI**	**PROBE RECEIVER CABLE**

Technical specifications		
	T25 version	**TT25/TT30 version**
DATA TRANSMISSION	Radio transmission	
TRANSMISSION RANGE	15 m	
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	0.5 µm	1 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 2 N Z: 12 N	X - Y: 0.5 ÷ 0.98 N Z: 5.8 N
OVERSTROKE *With standard 35 mm stylus*	X - Y: 11.2 mm Z: 4 mm	X - Y: 11.6 mm Z: 4 mm
COMPATIBLE WITH	WRI	



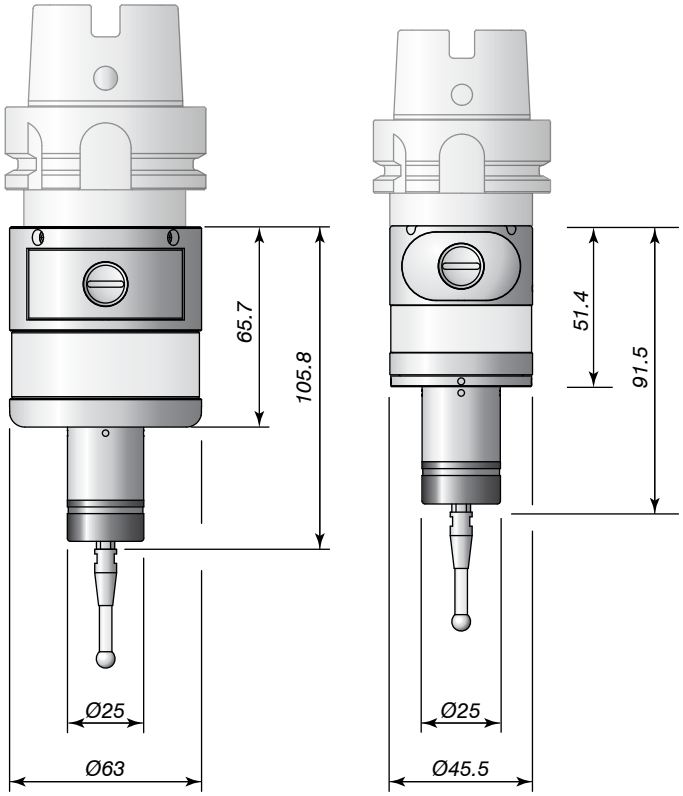
The WRP60 radio transmission touch probe is ideal for use on medium and large scale machining centres. Its modular design means that there are various specific packages available for each type of application, using the T25 and TT25 probes.
It can also be used together with extensions up to one metre in length.
It is used together with the WRI integrated interface receiver.

Probe	Receiver	Cable	Accessories	Kit
 **WRP60+T25** **WRP60+TT25**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	**SHANKS** **STYLI** **EXTENSIONS** 	**PROBE** **RECEIVER** **CABLE**

Technical specifications		
	T25 version	TT25 version
DATA TRANSMISSION	Radio transmission	
TRANSMISSION RANGE	15 m	
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	0.5 µm	1 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 2 N Z: 12 N	X - Y: 0.5 ÷ 0.98 N Z: 5.8 N
OVERSTROKE *With standard 35 mm stylus*	X - Y: 11.2 mm Z: 4 mm	X - Y: 11.6 mm Z: 4 mm
COMPATIBLE WITH	WRI	

WRP45P - 60P

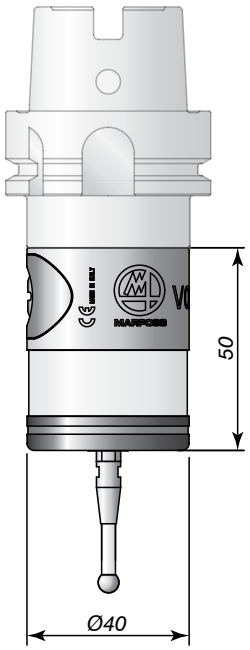
Working centres and milling machines



The WRP45P and WRP60P radio transmission touch probes are ideal for extremely precise machining on 5-axes machining centres. Featuring piezo-electric technology the probes provide highly accurate measurements and excellent repeatability (0.25 µm). Thanks to their modular design WRP45P and WRP60P can be used to inspect complex and difficult to reach surfaces or parts with deep cavities, with extensions that reach up to 1 metre in length.
They are used together with the WRI integrated interface receiver.

Probe	Receiver	Cable	Accessories	Kit
 **WRP60P** **WRP45P**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	**SHANKS** **STYLI** **EXTENSIONS** 	**PROBE** **RECEIVER** **CABLE**

Technical specifications	
DATA TRANSMISSION	Radio transmission
TRANSMISSION RANGE	15 m
REPEATABILITY (2σ) *With standard 50 mm stylus and 600 mm/min speed*	0.25 µm
TRIGGER FORCE *With standard 50 mm stylus*	X - Y: 0.07 N Z: 0.07 N
OVERSTROKE *With standard 50 mm stylus*	X - Y: 12 mm Z: 3.7 mm
COMPATIBLE WITH	WRI



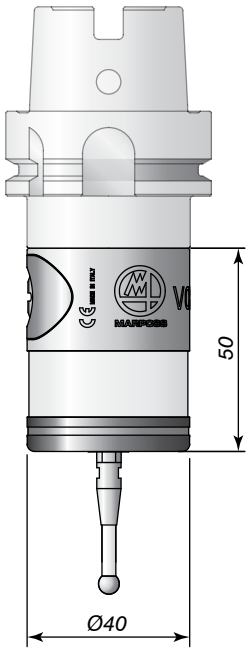
The compact VOP40 optical transmission touch probe is ideal for use on small and medium scale machining centres.
The innovative modulated optical transmission system guarantees a high level of immunity to optical interference and introduces unique advantages:

- multiple-channel system: up to 4 probes in the same application
- multiple spindle application: 2 probes in use simultaneously.

It is used together with the VOI integrated interface receiver, and is also compatible with the E83 RX receivers in Legacy mode.

Probe	Receiver	Cable	Accessories	Kit
 **VOP40**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS** **STYLI**	**PROBE** **RECEIVER** **CABLE**

Technical specifications	
DATA TRANSMISSION	OPTICAL
TRANSMISSION RANGE	6 m
REPEATABILITY (2σ) *With standard 50 mm stylus and 600 mm/min speed*	1 µm
TRIGGER FORCE *With standard 50 mm stylus*	X - Y: 0.5 ÷ 0.9 N Z: 5.8 N
OVERSTROKE *With standard 50 mm stylus*	X - Y: 12 mm Z: 6 mm
COMPATIBLE WITH	VOI - E83 RX - OTHER



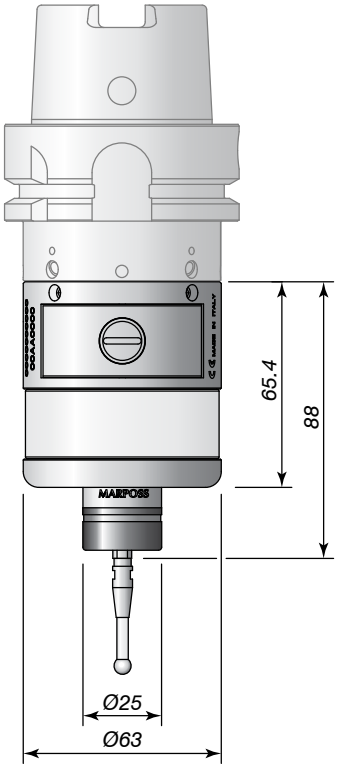
VOP40P is the touch probe system for use on 5-axis machining centres and milling machines for extremely precise machining. Featuring piezo-electric technology and ultra-compact design (a diameter of 40 mm), VOP40P provides highly accurate 3D surface measurements and excellent repeatability (0.25 µm). The innovative modulated optical transmission system guarantees a high level of immunity to optical interference and introduces unique advantages:

- multiple-channel system: up to 4 probes in the same application
- multiple spindle application: 2 probes in use simultaneously.

It is used together with the VOI integrated interface receiver, and is also compatible with the E83 RX receivers in Legacy mode.

Probe	Receiver	Cable	Accessories	Kit
 **VOP40P**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS** **STYLI**	**PROBE** **RECEIVER** **CABLE**

Technical specifications	
DATA TRANSMISSION	OPTICAL
TRANSMISSION RANGE	6 m
REPEATABILITY (2σ) *With standard 50 mm stylus and 600 mm/min speed*	0.25 µm
TRIGGER FORCE *With standard 50 mm stylus*	X - Y: 0.07 N Z: 0.07 N
OVERSTROKE *With standard 50 mm stylus*	X - Y: 12° Z: 6 mm
COMPATIBLE WITH	VOI - E83 RX - OTHER



The compact version of the VOP60 optical transmission touch probe is ideal for use on medium and large scale machining centres. The innovative modulated optical transmission system guarantees a high level of immunity to optical interference and introduces unique advantages:

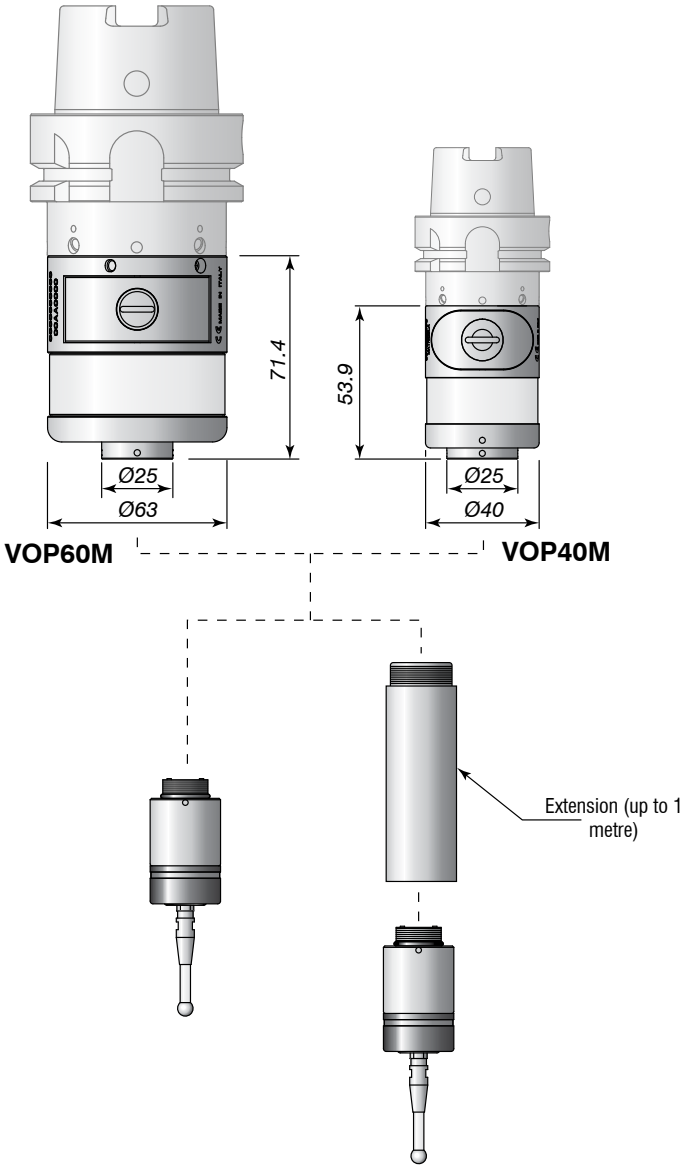
- multiple-channel system: up to 4 probes in the same application
- multiple spindle application: 2 probes in use simultaneously.

Thanks to its rugged build, the probe is ideal for use in critical operating conditions (vibration, coolants, etc.) In order to satisfy all our customer's requests, it is compatible with the Marposs T25 and TT25 range of probes.

It is used together with the VOI integrated interface receiver, and is also compatible with the E83 RX receivers in Legacy mode.

Probe	Receiver	Cable	Accessories	Kit
 **VOP60+T25** **VOP60+TT25**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS STYLI**	**PROBE RECEIVER CABLE**

Technical specifications		
	T25 version	TT25 version
DATA TRANSMISSION	OPTICAL	
TRANSMISSION RANGE	6 m	
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	0.5 µm	1 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 2 N Z: 12 N	X - Y: 0.5 ÷ 0.98 N Z: 5.8 N
OVERSTROKE *With standard 35 mm stylus*	X - Y: 11.2 mm Z: 4 mm	X - Y: 11.6 mm Z: 4 mm
COMPATIBLE WITH	VOI - E83RX - OTHER	

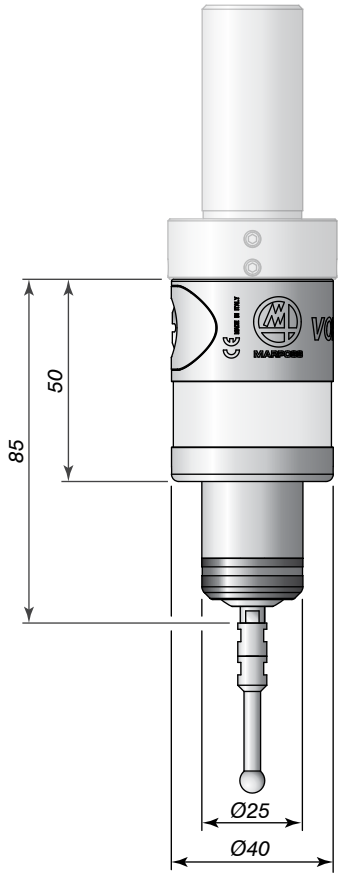


The VOP40M and VOP60M optical transmission touch probes in their modular version guarantee maximum applicative flexibility. In addition to the above, they also maintain the same specifications as the compact version.
VOP40M and VOP60M are configurable with Marposs T25 and TT25 probes and extensions up to 1 metre in length.
They are used together with the VOI integrated interface receiver, and are also compatible with the E83 RX receivers in Legacy mode.

Probe	Receiver	Cable	Accessories	Kit
 **VOP60M / VOP40M +T25** **VOP60M / VOP40M+TT25**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	**SHANKS** **STYLI** **EXTENSIONS** 	**PROBE** **RECEIVER** **CABLE**

Technical specifications
The same as for VOP60

VOP40L

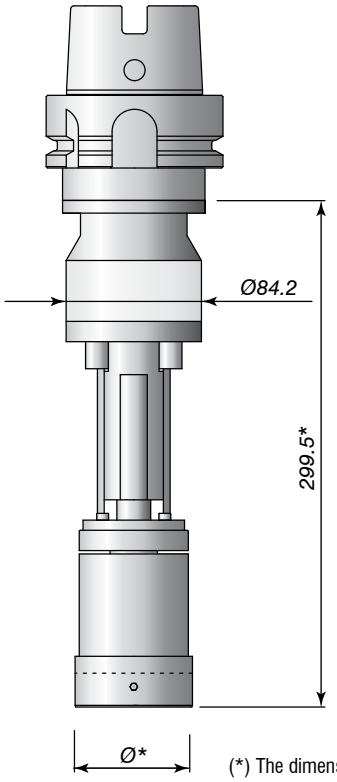


VOP40L is the probing system for lathes and turning centres of all sizes. Based on a compact design, VOP40L provides high performance with robust build, which means that it is suitable for use in demanding machining environments, where probes are constantly exposed to coolant oils and chips at extremely high temperatures. Thanks to the innovative optical transmission system, which guarantees high levels of immunity to interference, it is possible to install two different applications on multi-turret machining centres, using two probes simultaneously.

It is used together with the VOI integrated interface receiver, and is also compatible with the E83 RX receivers in Legacy mode.

Probe	Receiver	Cable	Accessories	Kit
 **VOP40L**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS** **STYLI**	**PROBE** **RECEIVER** **CABLE**

Technical specifications	
DATA TRANSMISSION	OPTICAL
TRANSMISSION RANGE	6 m
REPEATABILITY (2σ) *With standard 50 mm stylus and 600 mm/min speed*	0.5 µm
TRIGGER FORCE *With standard 50 mm stylus*	X - Y: 2 N Z: 12 N
OVERSTROKE *With standard 50 mm stylus*	X - Y: 11.2 mm Z: 4 mm
COMPATIBLE WITH	VOI - E83 RX - OTHER



(*) The dimensions depend on the application

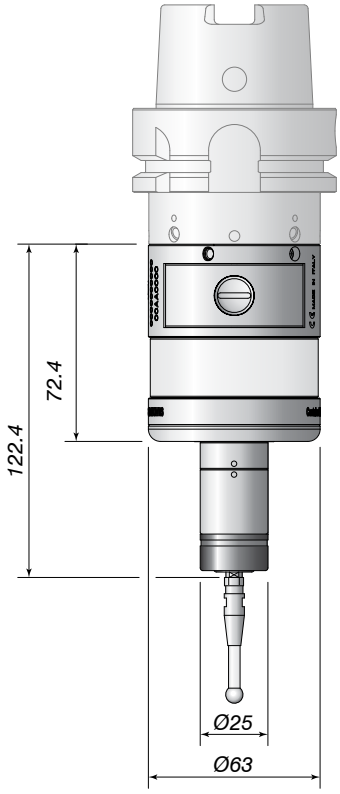
WRG is a radio transmission plug for fast, accurate and simple hole inspections on machining centres. Thanks to its rugged build it is ideal for use in mass production applications, and can easily be adapted to the customer's measurement requirements.
The great advantage of using a multi-transducer system for various types of measurement lies in the efficient anti-collision recoil system, and the ability to manage the WRG plugs and WRP part inspection probes on the same machine (up to 12 devices) using a single receiver. It is compatible with the WRI receiver.
The system can interface with the Marposs P7 or E9066 amplifiers in order to display the measurement results, battery status and recoil.

Probe	Receiver	Cable	Accessories	Kit
 **WRG**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS**	**PROBE** **RECEIVER** **CABLE**

WRG buffer technical specifications (single section)	
DATA TRANSMISSION	Radio transmission
DIMENSIONS*	measureable Ø: 41 ÷ 105 mm length: 299.5 mm
REPEATABILITY *2.77σ with Ra ≤ 0.8*	max { 7% tolerance 0.7 µm
REPEATABILITY *2.77σ with 0.8 ≤ Ra ≤ 6.3*	max { 10% tolerance 1.2 µm
LINEARITY RANGE	±300 µm
MAX SHANK/NOZZLE COUPLING TIR	<50 µm
NUMBER OF TRANSDUCERS	max 8
COUPLED WITH	WRI

** = in case of applications that require the use of plugs with different dimensions to those described, please contact your nearest Marposs Office*

WRSP60

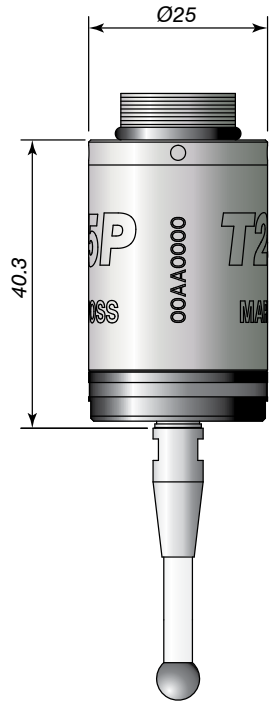


The WRSP60 is a scan probe that carries out precise, complete quality controls on the machining process directly in the machine environment, by performing profile and surface contact scans on the newly worked parts.
Thanks to the data transmission via radio the WRSP60 is ideal for use on any type of machine tool with chips extraction. WSRP60 probes perform operations that would be impossible with standard touch probes, such as profile quality controls, part misalignment corrections and surface deformation checks with cutting program correction, master comparisons and run-out checks and part positioning.
The system transmits the data to a WRI receiver using an integrated interface. The data are collected, analysed and displayed by a proprietary Marposs software package.

Probe	Receiver	Cable	Accessories	Kit
 **WRSP60**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	 **SHANKS** **STYLI**	**PROBE** **RECEIVER** **CABLE**

Technical specifications	
DATA TRANSMISSION	Radio transmission
TRANSMISSION RANGE	15 m
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	0.4 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 0.9 N Z: 5.5 N
OVERSTROKE *With standard 50 mm stylus*	X - Y: 12° Z: 3.9 mm
COMPATIBLE WITH	WRI

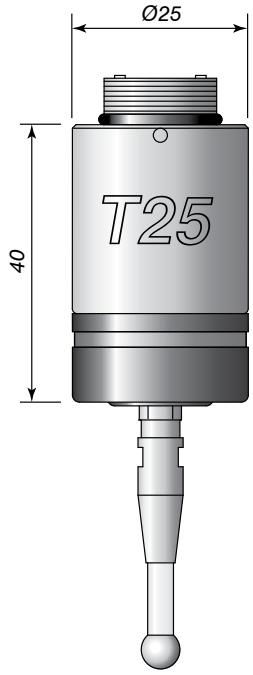
T25P



The first high-precision Marposs touch probe designed for use on sharpeners and grinders. Thanks to the innovative piezo-electric technology it is possible to achieve unparalleled levels of performance on the 3D geometry.
This innovative system means it is possible to achieve null pre-travel and very low touch forces, with repeatability of less than 1 micron in all touch directions.
Thanks to is compact geometry it is suitable for use even in the smallest spaces.
Measurement accuracy is further guaranteed by using long styli. The 25P probe is compatible with all the accessories in the Mida range and may also be used for retrofit and upgrade applications thanks to its full compatibility with the pre-existing wiring schemes for T25, TT25 and similar probes.
It is used together with the E32U interface.

Probe	Support	Interface	Accessories	Kit
 **T25P**		 **E32U**	 **STYLI**	**PROBE SUPPORT INTERFACE**

Technical specifications	
DATA TRANSMISSION	CABLE
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	0.25 µm
ISOTROPY *With standard 35 mm stylus and 600 mm/min speed*	X - Y: ±0,25 µm X - Y - Z: ±1 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 0.05 N Z: 0.05 N
OVERTRAVEL *With standard 35 mm stylus*	X - Y: 12° Z: 6 mm
COUPLED WITH	E32U



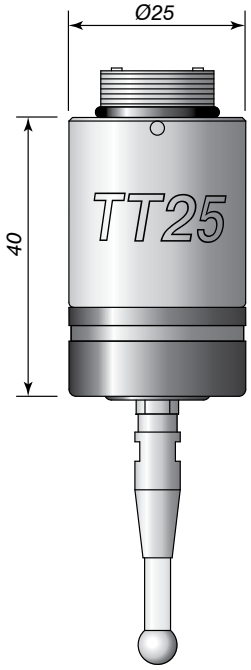
The MIDA range T series probes are high performance touch probes. Ideal for every type of machine tool. Their excellent unidirectional repeatability means they are perfect for use on prismatic surfaces or surfaces with a low level of complexity.
Thanks to their mechanical structure, they also provide excellent immunity to the effects of processing vibrations and machine axis acceleration. This means that they are ideal for use with mechanical manufacturing processes on machining centres, lathes and turning centres.
The T series features a number of different models that vary according to the measurement force or type of protection structure, which may either be standard or steel in the case of lathe applications. Each model is compatible with all Marposs wireless transmission systems, but may also be installed via cable.
The probe is available in four different models:

- T25 (with rubberized fabric seal)
- TL25 (low measurement force, with rubberized fabric seal)
- T25S (with metallic shield)
- TL25S (low measurement force, with metallic shield)

It is used together with the E32U interface.

Probe	Support	Interface	Accessories	Kit
 **T25**		 **E32U**	 **STYLI**	**PROBE SUPPORT INTERFACE**

Technical specifications				
	T25G	**TL25G**	**T25S**	**TL25S**
DATA TRANSMISSION	CABLE			
REPEATABILITY (2σ)* *With standard 35 mm stylus and 600 mm/min speed*	0.5 µm			
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 2 N Z: 12 N	X - Y: 0.9 N Z: 5.5 N	X - Y: 2 N Z: 12 N	X - Y: 0.9 N Z: 5.5 N
OVERTRAVEL *With standard 35 mm stylus*	X - Y: 11.2 mm Z: 4 mm			
COUPLED WITH	E32U			



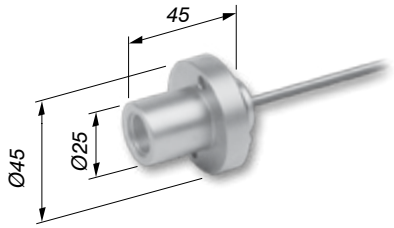
The MIDA range TT series probes are high performance touch probes. Ideal for every type of machine tool. Their excellent unidirectional repeatability means they are perfect for use on sculpted surfaces or surfaces with a low level of complexity.
It also offers an excellent level of spatial isotropy that, together with is high repeatability, means it can be used for accurate 3-D measurements on the complex type of surfaces typically performed on milling machines used to produce moulds, shells, turbines etc.
The TT series is available in a range of different models that vary according to the measurement force. Each model is compatible with all Marposs wireless transmission systems, but may also be installed via cable.
The probe is available in the standard TT25 and high measurement force TT25H versions.
It is used together with the E32U interface.

Probe	Support	Interface	Accessories	Kit
 **TT25**		 **E32U**	 **STYLI**	**PROBE SUPPORT INTERFACE**

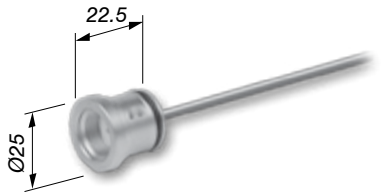
Technical specifications		
	TT25	**TT25h**
DATA TRANSMISSION	CABLE	
REPEATABILITY (2σ) *With standard 35 mm stylus and 600 mm/min speed*	1 µm	2 µm
TRIGGER FORCE *With standard 35 mm stylus*	X - Y: 0.5 ÷ 0.95 N Z: 5.8 N	X - Y: 0.9 ÷ 1.75 N Z: 10.8 N
OVERTRAVEL *With standard 35 mm stylus*	X - Y: 11.6 mm Z: 4 mm	
COUPLED WITH	E32U	

Supports for Probes

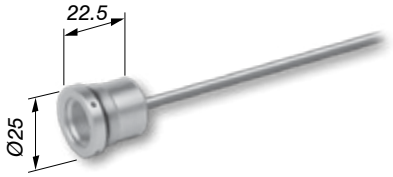
The range is complete with are series of supports that help to render the Marposs probes more versatile. This means that it is possible to satisfy every possible machine requirement or customer specification.



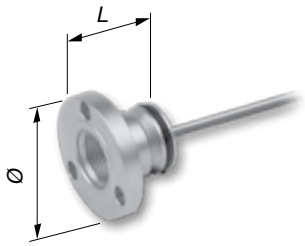
Support with axial adjustment for T25/TT25 probes

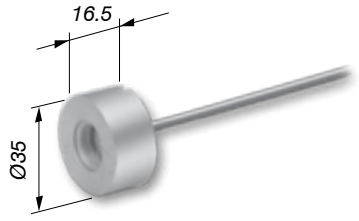


Support with angular adjustment for T25/TT25 probes



Fixed, threaded support for T25/TT25 probes



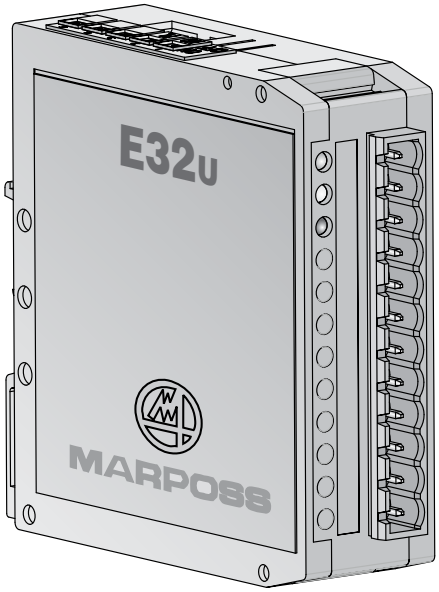


Fixed support for T25/TT25 probes

Probe	L mm	Ø mm
T25/TT25/TL25	22.5	37
TT30	24.5	48

Fixed support with mounting flange for T25/TT25 and TT30 probes

INTERFACES



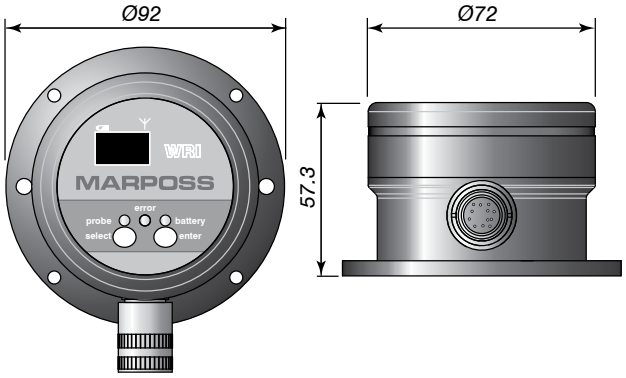
E32U The E32U interface converts the signals generated by the touch probe in a signal that can be processed by the machine tool CNC.

There is a terminal block on the front panel of the unit for I/O connections, as well as three LEDs that indicate when the unit is connected to its power supply and the state of the probe and the interface.
In detail the LEDs indicate:

- GREEN LED: the probe power supply state
- YELLOW LED: flashes when in touch
- RED LED: interface fault state

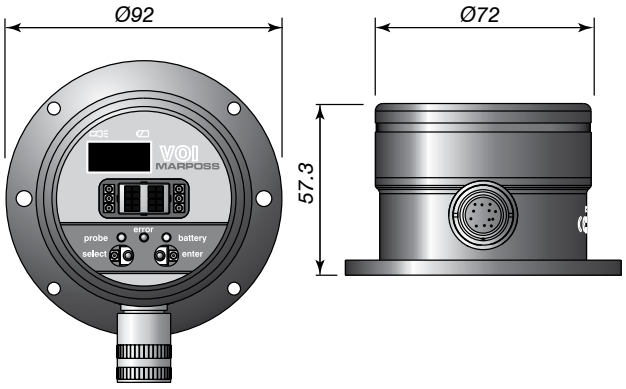
The five switches on the top of the unit can be used to select the system operating parameters.
The E32U universal interface can be used with all Marposs probes with cable connection.
The E32U interface replaces the E32R and E32RP interfaces.

Technical specifications	
POWER SUPPLY	24 Vdc unstabilized
CURRENT CONSUMPTION	150 mA max
OUTPUT SIGNALS	Solid state relay (SSR) ±30 V peak ±100 mA peak
EXTERNAL LEDS	Max current 5 mA



WRI

TheWRIintegratedinterface,radio transmission receiver is available in two versions, with axial and radial connectors, the radial version is supplied with a magnet for temporary installations, which can be useful during the set-up phase or outside the machine environment.
It is used for programming the system, which may be carried out by using the optical pulses or the remote control unit. WRI features a 4 digit display and can be connected up to four probes for part inspection and tool checks, activated in sequential mode. The dedicated WRG buffer version also features a RS422 serial output.
It is compatible with all Marposs radio transmission probe.



VOI

The VOI integrated interface receiver uses the innovative Marposs modulated optical transmission technology. In order to obtain the best possible installation it is available in two versions, axial and radial, the radial version is supplied with a magnet for temporary installations, which can be useful during the set-up phase.
It is used for programming the system, which may be carried out by using the optical pulses or the remote control unit. VOI features a 4 digit display and can be connected up to four probes for part inspection and tool checks, activated in sequential mode.
Used together with the new generation VOP optical transmission probes.

MEASUREMENT ERROR

MEASUREMENT PRECISION

The non-contact Mida **ML75P** laser tool pre-setting and verification system is the key to maintaining the micrometric accuracy required by the most demanding machining applications, as in the aerospace field. You get consistent quality, less waste and more profit. **Marposs means precision.**

www.marposs.com

MARPOSS

YOUR GLOBAL METROLOGY PARTNER

TOOL CHECK

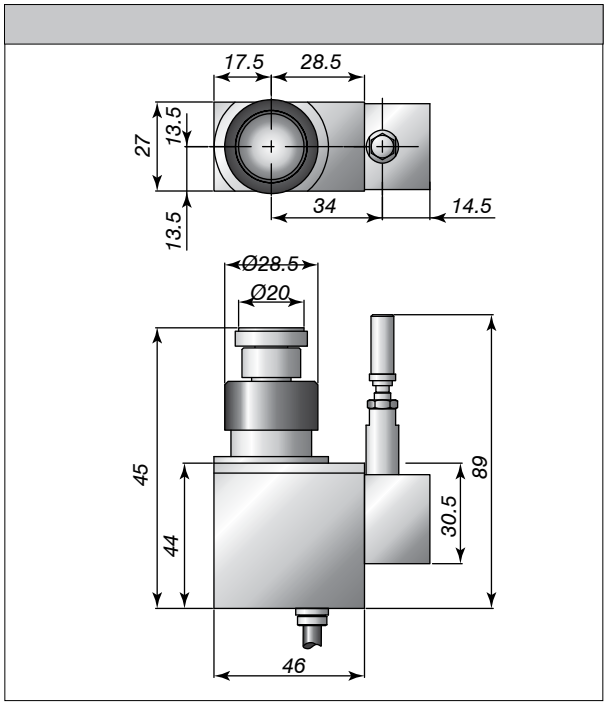
The use of automatic tool check on CNC machines has resulted in significant improvements in production quality.
When using external tool presetting it is not possible to measure the tools under their real working conditions and errors may occur when entering the data in the CNC manually. Furthermore, external measurement systems cannot be used to check tool wear and sharpness between cycles.
Marposs tool checks can be used to determine length, radius, wear, sharpness and breakages, as well as verifying that the tool has been mounted in the spindle. These operations are performed automatically on the machine, compiling the measurement data in the tool table. This is possible thanks to the synergy that exists between the Marposs measurement instruments and the software cycles.
The **contact tool checks** are the ideal applications for use on every type of machining and turning centre.
The **non contact tool checks**, using laser technology, are the most accurate and flexible in the Marposs tool check product range.
The **high precision tool check arms** are modular, flexible and easy to install, and may be used on every type of lathe.

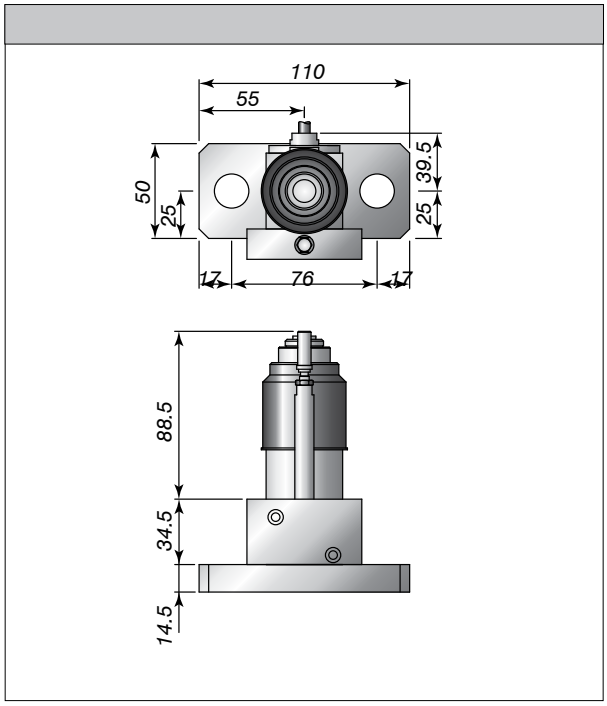
CONTACT CHECK FOR MACHINING CENTRES

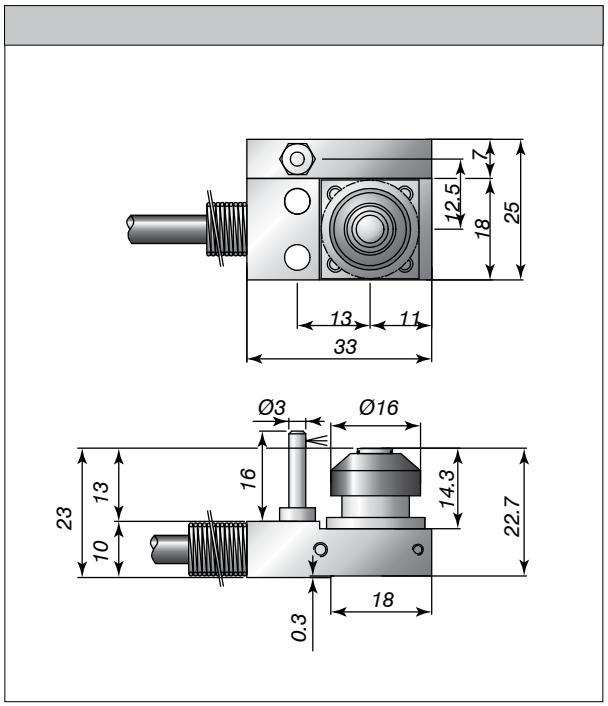
NON CONTACT CHECK FOR MACHINING CENTRES

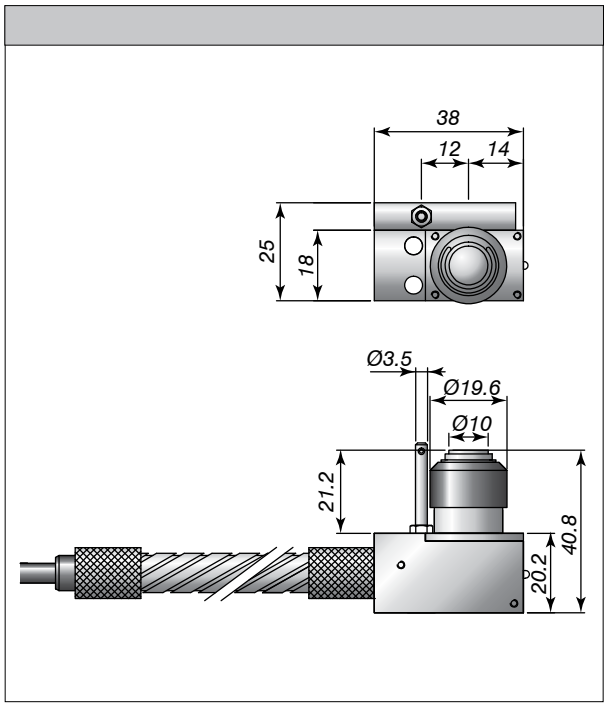
CONTACT CHECK FOR LATHES

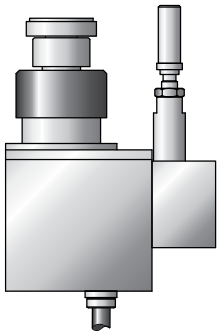
TLS is a range of compact probes for tool checks on machining centres.
This range features excellent repeatability at high touch speeds, which equates to a significant increase in production quality and a corresponding reduction in cycle times.
The range is available in a variety of models so that it is suitable for use with every type of application, and this means that it is the ideal solution for mass production and unsupervised process applications.



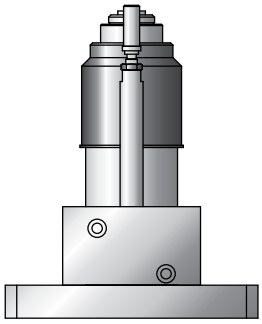




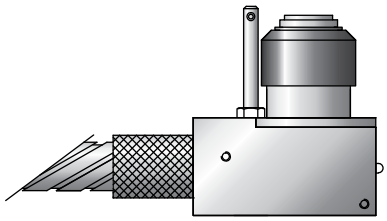




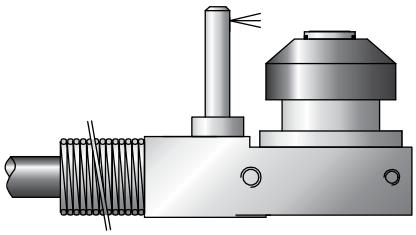
Technical specifications	
TOTAL STROKE	8 mm
CABLE OUTPUT	lower
CABLE LENGTH	10 m
STROKE TO SKIP	0.5 mm
REPEATABILITY (2σ)	1 µm
TRIGGER FORCE	1.2 to 1.7 N*
OVERSTROKE	5 mm



Technical specifications	
TOTAL STROKE	26 mm
CABLE OUTPUT	lower / side*
CABLE LENGTH	10 m
STROKE TO SKIP	0.5 mm
REPEATABILITY (2σ)	1 µm
TRIGGER FORCE	2.5 to 3 N*
OVERSTROKE	10.5 mm

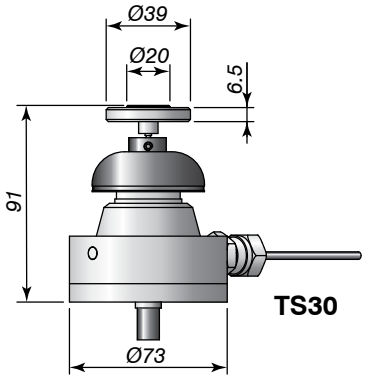


Technical specifications	
TOTAL STROKE	5 mm
CABLE OUTPUT	side
CABLE LENGTH	3 m
STROKE TO SKIP	≈0
REPEATABILITY (2σ)	0.5 µm
TRIGGER FORCE	0.5 to 2 N*
OVERSTROKE	3 mm

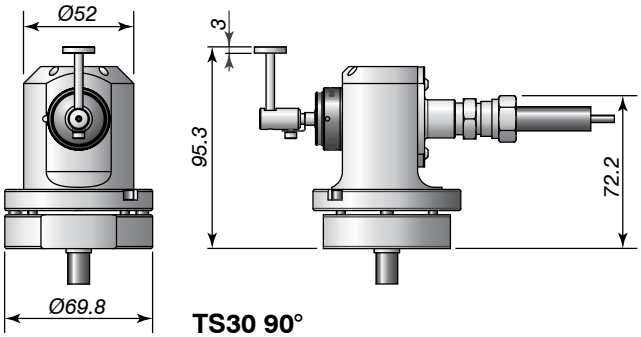


Technical specifications	
TOTAL STROKE	3 mm
CABLE OUTPUT	side
CABLE LENGTH	3 m
STROKE TO SKIP	≈0
REPEATABILITY (2σ)	1 µm
TRIGGER FORCE	1.5 ÷ 2 N
OVERSTROKE	/

(*) = depending on model



TS30



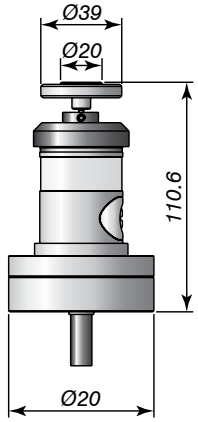
TS30 90°

TS30 is a tool check probe for use on machining centres with cable transmission.
The probe may be used for tool integrity checks, tool length and diameter measurements, and tool wear compensation and features excellent repeatability and very high touch speed.
It has been designed to withstand critical environmental conditions. Furthermore, the central part of the contact disk is in stainless steel in order to protect it from damage during the measurement operation.
The interface is integrated into the probe.
TS30 90° is the tool setter that can be used to optimize the installation process, as well as the occupied working area space, thanks to the stylus mounted at 90° to the body. In fact, it uses a highly innovative 3 step alignment system, which has been designed
to be quick and easy to use, in order to ensure that the new base, probe body and stylus are positioned correctly. The TS30 90° probe alignment procedure can be performed in less than 5 minutes.
The probe is also suitable for measuring small tools since it exerts reduced contact force.

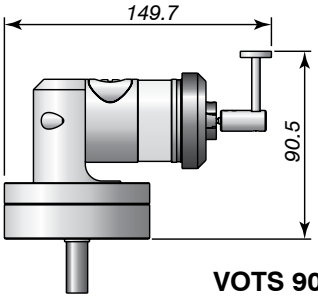
Probe	Accessories	Kit
 **PROBE**	 **STYLI**	**PROBE STYLUS**

Mechanical Specifications	
DATA TRANSMISSION	CABLE
REPEATABILITY (2σ) *With standard stylus and 600 mm/min speed*	1 µm
TRIGGER FORCE	X - Y: 1.2 ÷ 2.4 N Z: 8.6 N
OVERSTROKE	X - Y: 7.8 mm Z: 3.5 mm

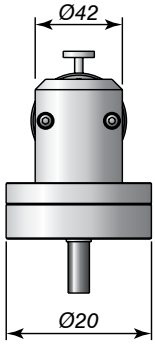
Electrical Specifications	
POWER SUPPLY	24 VDC unstabilized (12-30 V)
CURRENT CONSUMPTION	35 mA max



VOTS



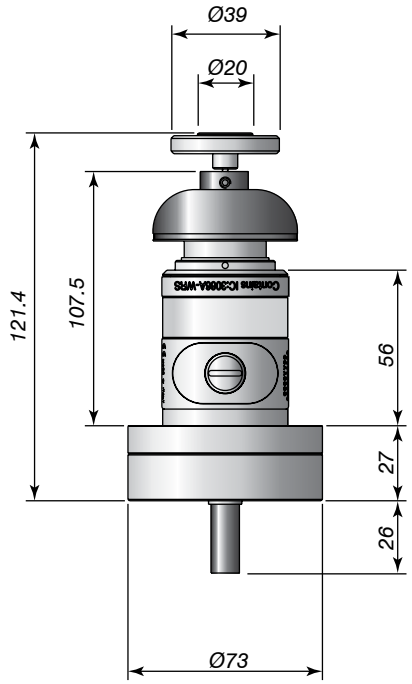
VOTS 90°



VOTS is a modulated optical transmission probe for tool checks, it may be used for monitoring tool breakages, wear and integrity, as well as measuring tool length and diameter on machining centres. Thanks to the twin vertical and 90 degree versions, it is suitable for use with a variety of applications. The complete absence of cables means that it is simple to install.
It may be used in TWIN applications, together with a VOP part probe with a single optical receiver.
Featuring excellent repeatability and high touch speed, it has been designed to withstand the most hostile working environments.
Used together with VOI receivers.

Probe	Receiver	Cable	Accessories	Kit
 **PROBE**	 **VOI**	 **5 m** **10 m** **15 m** **30 m**	 **STYLI**	**PROBE** **RECEIVER** **CABLE**

Mechanical Specifications	
DATA TRANSMISSION	OPTICAL
REPEATABILITY (2σ) *With standard stylus and 600 mm/min speed*	1 µm
TRIGGER FORCE	X - Y: 0.5 ÷ 0.9 N Z: VOTS 5.8 N / VOTS 90° 3 N
OVERSTROKE	X - Y: 12° Z: VOTS 12° / VOTS 90° 6 mm
COUPLED WITH	VOI - VOP40/VOP60 FOR TWIN APPLICATIONS



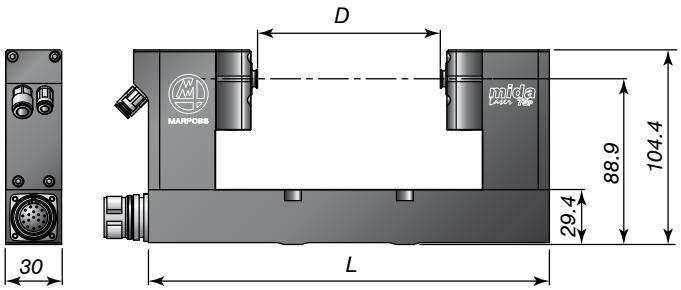
WRTS is a tool check probe for use on machining centres with radio transmission.
The probe may be used for tool integrity checks, tool length and diameter measurements, and tool wear compensation and features excellent repeatability and very high touch speed.
WRTS may be used in twin applications together with the WRS inspection probe.
It has been designed to withstand critical environmental conditions. Furthermore, the central part of the contact disk is in stainless steel in order to protect it from damage during the measurement operation.
Used together with WRI receivers.

Probe	Receiver	Cable	Accessories	Kit
 **WRTS**	 **WRI**	 **5 m** **10 m** **15 m** **30 m**	 **STYLI**	**PROBE** **RECEIVER** **CABLE**

Mechanical Specifications	
DATA TRANSMISSION	Radio transmission
REPEATABILITY (2σ) *With standard stylus and 600 mm/min speed*	1 µm
TRIGGER FORCE	X - Y: 1 ÷ 2 N Z: 8.6 N
OVERSTROKE	X - Y: 7.8 mm Z: 3.5 mm
COUPLED WITH	WRI - WRP45/WRP60 FOR TWIN APPLICATIONS

ML75P stand alone

Machining centres and milling machines



L [mm]	D [mm]	ToolØ measurable [mm] min	max
136	32	0.03	27
165	48	0.04	43
215	98	0.05	93
295	178	0.08	173
415	298	0.15	293

ML75P "stand alone" is a compact non contact system for fast and accurate tool measurement and tool verification on machining centres.
The focused laser beam is protected by the exclusive patented system that uses ATE (Air-Tunnel Effect) technology. This system guarantees increased immunity to interference from chips, coolant and turbulence in the air barrier.
The rugged metallic structure, the high quality of the optics and the intelligent electronics guarantee high levels of accuracy and repeatability.
Available in a range of sizes.
The system consists of a laser fork and an interface for connection to the CNC.
The interface includes a microprocessor that processes the signal, being able to distinguish the tool from drops of coolant, swarf, chips.

PART CHECK

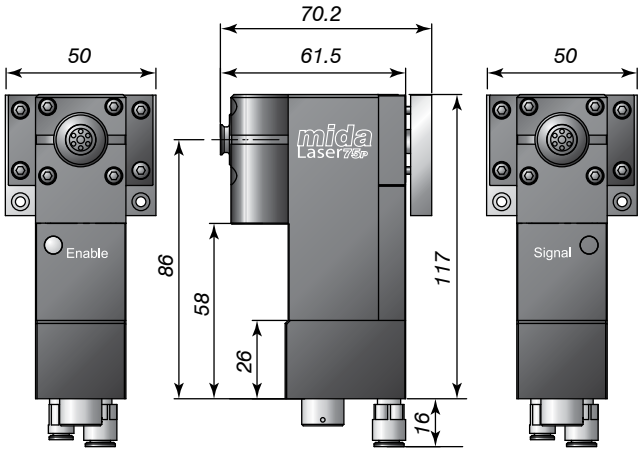
Fork	Interface	Cable	Accessories	Kit
 ML75P Connector: lower side frontal	 I/O Interface	 10 m 20 m 30 m CONNECTOR: 90° Axial	Tool cleaning kit Fixing plate Air filter unit Calibration tool	**LASER FORK INTERFACE CABLE**

Mechanical Specifications	
REPEATABILITY (2σ) *with the laser focused*	0.2 µm
MINIMUM MEASURABLE Ø *with the laser focused and focal distance < 50 mm*	50 µm
OPTICAL PROTECTIONS	1. Mechanical shutter 2. Air blower system

Pneumatic Specifications		
AIR BARRIER	Pressure	0.5 ÷ 3.5 bar *(<1.5 bar with respect to the shutter)*
	Filtering	0.01 µm*
	Consumption at 3 bar	9 l/min (closed)
		max 95 l/min (open)
SHUTTER / TOOL CLEANER	Pressure	3 ÷ 6 bar
	Filtering	5 µm*

(*) = input air quality (=40 µm) in accordance with the standard (ISO 8573-1 / 7.4.4)

Electrical Specifications	
POWER SUPPLY	12 ÷ 24 VDC ± 20%
CURRENT	250 mA max



ML75P "modular" is a variant of the "stand alone" version, where Emitter and Receiver are separate.
This solution is very useful for complex installations requiring a large distance between Emitter and Receiver. Ideal for horizontal machining centres with pallet changer. The modular system guarantees excellent performance and is available in two versions:

- focused, with a maximum distance of 500 mm
- collimated, with a maximum distance of 3 m. It is possible to supply distances up to 8 m upon request.

The interface includes a microprocessor that processes the signal, being able to distinguish the tool from drops of coolant, swarf, chips.

PART CHECK

Modules	Interface	Cable	Accessories	Kit
 ML75P modular	 I/O Interface	 10 m 20 m 30 m CONNECTOR: 90°	Alignment plate Air filter unit Calibration tool	**RECEIVER MODULE** **EMITTER MODULE** **CABLE** **INTERFACE**

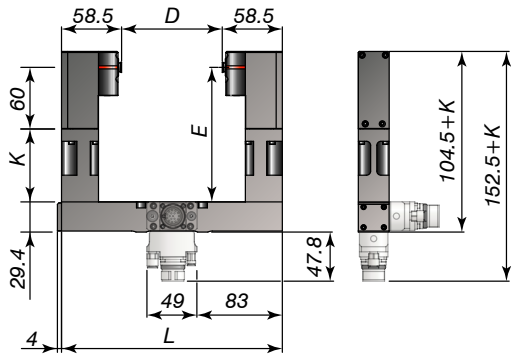
Mechanical Specifications	
REPEATABILITY (2σ) *with the laser focused*	0.2 µm
MINIMUM MEASURABLE Ø	50 µm *(with focused laser beam and focal length < 50 mm)* = 1 mm *(for collimated laser beam)*
OPTICAL PROTECTIONS	1. Mechanical shutter 2. Air blower system
OPERATING DISTANCE	maximum distance between emitter and receiver: 3 metres (standard version)

Pneumatic Specifications		
AIR BARRIER	Pressure	0.5 ÷ 3.5 bar *(<1.5 bar with respect to the shutter)*
	Filtering	0.01 µm*
	Consumption at 3 bar	9 l/min (closed)
		max 95 l/min (open)
SHUTTER / TOOL CLEANER	Pressure	3 ÷ 6 bar
	Filtering	5 µm*

(*) = input air quality (=40 µm) in accordance with the standard (ISO 8573-1 / 7.4.4)

Electrical Specifications	
Power supply	12 ÷ 24 VDC ± 20%
Current	250 mA max

Mida Laser 75P with increased laser beam height



Solutions with other "L" and "D" values are available	**L** [mm]	**D** [mm]	**E** [mm]	**K** [mm]
	295	178	85.4	25.4
	415	298	131	71

Various special versions are available:

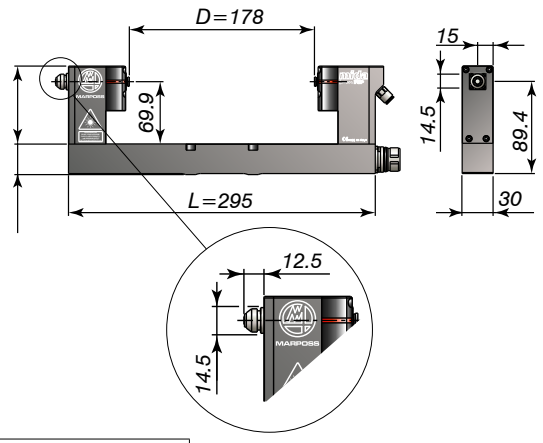
Mida Laser 75P with increased laser beam height, allows the spindle positioning in critical dimensions conditions

Mida Laser 75P hybrid, equipped with lateral touch probe. The probe can also be used for thermal drift compensation measurements, by monitoring the third axis

Mida Laser 75P for tilting tables, this version is supplied with a connector mounted on the bottom so that it can be installed on tilting tables with internal connections. The tool measurement is made possible by rotating the table through 90°.

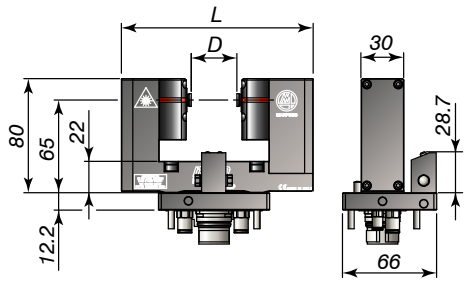
Mida Laser 75P Long Distance, since the stand alone versions are aligned by Marposs when they are delivered and are less sensitive to machine vibrations, the Long Distance probes are suitable for use in situations requiring considerable distances between the modules.

Mida Laser 75P stand alone hybrid (with A90 mechanical contact)



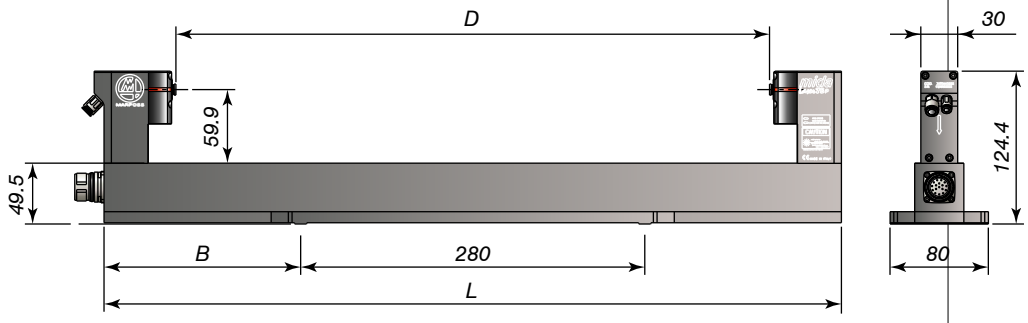
Solutions with "L" and "D" values equal to the ones of the Mida Laser 75P Stand Alone are available

Mida Laser 75P for tilting tables



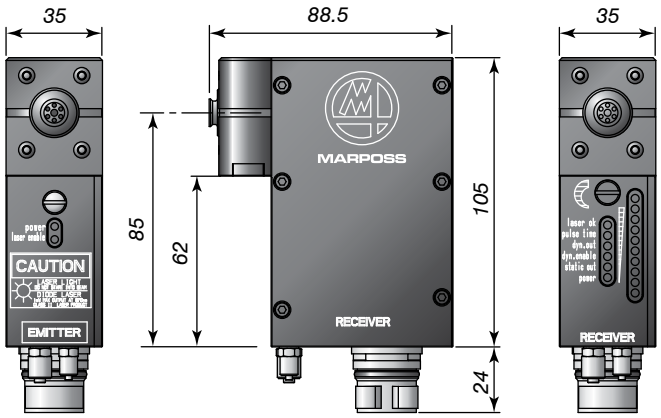
Solutions with other "L" and "D" values are available

Mida Laser 75P Stand Alone Long Distance



L [mm]	**D** [mm]	**B** [mm]	ToolØ measurable [mm] min	max
600	483	160	0.25	478
800	683	260	0.35	678
1000	883	360	0.50	878

PART CHECK



Mida Laser 105P modular, with focused or collimated laser beam, is available in two versions:

- with sectioned cable and connector
- with integrated cable and cable clamp

Focal length up to 1.8 m. The collimated version can function with modules at a distance up to 11 m.
Ideal for large scale machines, complete with integrated interface.

PART CHECK

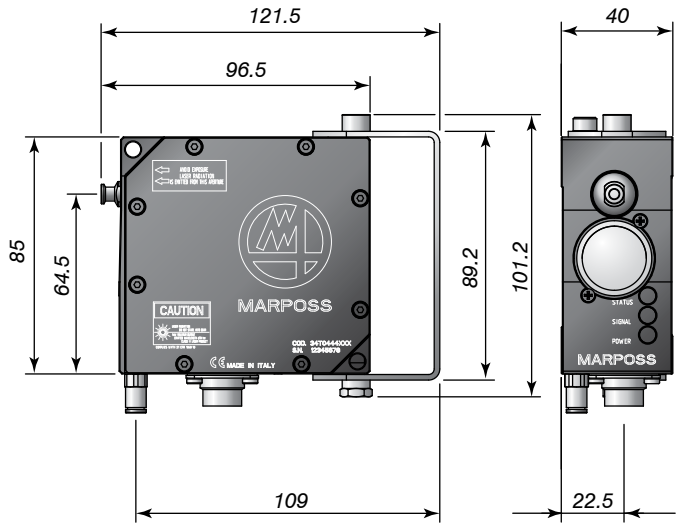
Modules	Interface	Cable	Accessories	Kit
 ML105P	 I/O Interface	 10 m 20 m 30 m CONNECTOR: 90°	Alignment plate Air filter unit Calibration tool	**RECEIVER MODULE** **EMITTER MODULE** **INTERFACE** **CABLE**

Mechanical Specifications	
REPEATABILITY (2σ) *with the laser focused*	0.2 µm
MINIMUM MEASURABLE Ø *with the laser focused* *and focal distance < 50 mm*	800 µm
OPTICAL PROTECTIONS	1. Mechanical shutter 2. Air blower system
OPERATING DISTANCE	maximum distance between emitter and receiver: 12 metres

Pneumatic Specifications		
AIR BARRIER	Pressure	0.5 ÷ 3.5 bar *(<1.5 bar with respect to the shutter)*
	Filtering	0.01 µm*
	Consumption at 3 bar	9 l/min (closed)
		max 95 l/min (open)
SHUTTER / TOOL CLEANER	Pressure	3 ÷ 6 bar
	Filtering	5 µm*

(*) = input air quality (=40 µm) in accordance with the standard (ISO 8573-1 / 7.4.4)

Electrical Specifications	
POWER SUPPLY	12 ÷ 24 VDC ± 20%
CURRENT	100 mA max



TBD is the tool breakage monitoring system that detects the axial breakage within one second in the case of concentric solid body tools such as tips, pins, mills and spherical head mills. By using reflection laser technology it is possible to monitor a vast range of tools at distances of between 300 mm and 2 m.
The standard version is suitable for use at spindle speeds of 200 to 5000 r.p.m., whereas the HS (High Speed) version is suitable for speeds of 1000 to 80000 r.p.m.
It is available in fixed focus and adjustable focus with connector, or fixed focus with cable clamp versions.
A blower for cleaning the receiver glass can be supplied upon request.

PART CHECK

Control unit	Interface	Cable	Accessories	Kit
 TBD	Integrated	 5 m 10 m 15 m 30 m	Sapphire glass Blower kit Air filter group	**CONTROL UNIT "C" SUPPORT CABLE**

Mechanical Specifications	
OPERATING RANGE	300 mm ≤ x ≤ 2.0 m
MINIMUM MEASURABLE TOOL*	0.15 to 300 mm - 0.75 to 2 m

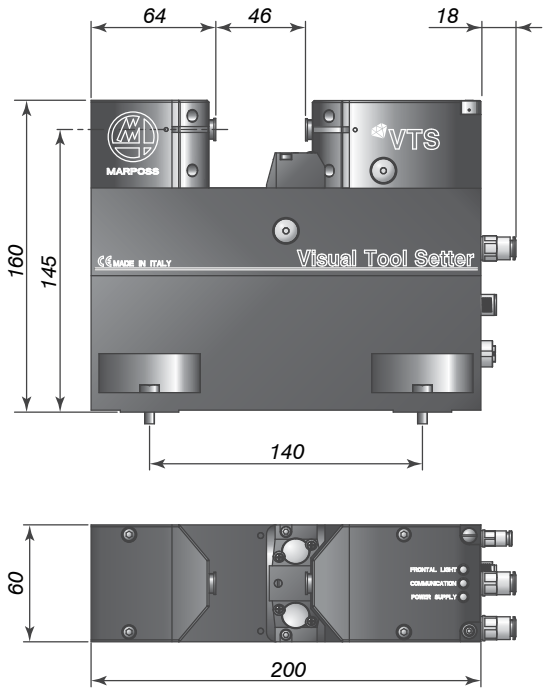
(*) = data may vary depending on the tool coating, installation distance and operating conditions

Pneumatic Specifications		
AIR BARRIER	Pressure	0.5 ÷ 3.5 bar *(<1.5 bar with respect to the shutter)*
	Filtering	0.01 µm**
SHUTTER / TOOL CLEANER	Pressure	3 ÷ 6 bar
	Filtering	5 µm**

(**) = input air quality (=40 µm) in accordance with the standard (ISO 8573-1 / 7.4.4)

Electrical Specifications	
POWER SUPPLY	12 ÷ 24 Vdc ± 20% (*Must be S.E.L.V. as defined by the standard EN 60950-1)*
CURRENT CONSUMPTION	300 mA max
OUTPUT SIGNALS	SSR – Max 50V Nominal current 100 mA
INPUT SIGNALS	+24 Vdc (source) 0 Vdc (sink)
MAXIMUM EMISSION POWER	<1 mW (*Class 2 device in accordance with the standard EN 60825-1)*
LASER WAVELENGTH	Visible, 670 nm

Measurement cycles included:	
CNC	Brother - Fanuc - Haas - Heidenhain - Makino - Mazak - Mitsubishi - Siemens - Yasnac



VTS is the new Marposs non contact measurement system for tool checking on applications where maximum quality is the priority.
The innovative image processing technology guarantees excellent metrological performance, while offering all the advantages of contact and non contact systems. The results are independent of the tool geometry and dimensions and the measurement is performed under real operating conditions, thereby reducing presetting time and avoiding the risk of breakages.
The measurement is extremely precise and fast. In fact, Diameter, Length, Radius and TIR are evaluated on the basis of a single position and a single measurement cycle without the necessity of providing information about the tool to be measured beforehand.
The dual (mechanical and digital) protection system guarantees the reliability of the results even under the most testing operating conditions; the Graphic User Interface (GUI), which is compatible with a wide range of platforms, means that the system is very easy to use.
VTS is available in standard and compact versions

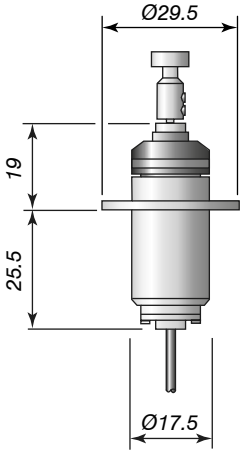
Unit of Measurement	Unit of processing	Cable	Accessories	Kit
 VTS		 10 m 15 m CONNECTOR: 90° Axial	Marposs Nemo Marposs CS160HI Air group filter Calibration tool	**VTS - SU** **VTS - EU** **CABLES**

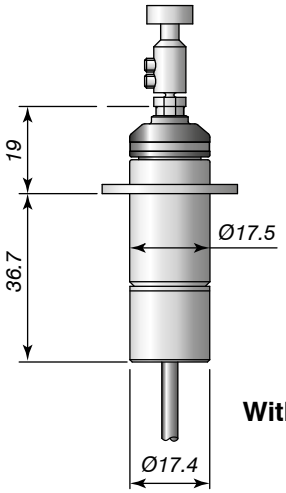
Mechanical Specifications	
REPEATABILITY (6σ)	0.2 µm
MINIMUM MEASURABLE Ø	10 µm
OPTICAL PROTECTIONS	1. Mechanical shutter 2. Barrier air system

Pneumatic Specifications		
AIR BARRIER	Pressure	1.5 ÷ 3 bar
	Filtering	0.01 µm*
SHUTTER / TOOL CLEANER	Pressure	3 ÷ 6 bar
	Filtering	5 µm*

(*) = input air quality (=40 µm) in accordance with the standard (ISO 8573-1 / 7.4.4)

Electrical Specifications	
POWER SUPPLY	12 ÷ 24 VDC ± 20%
CURRENT	250 mA max

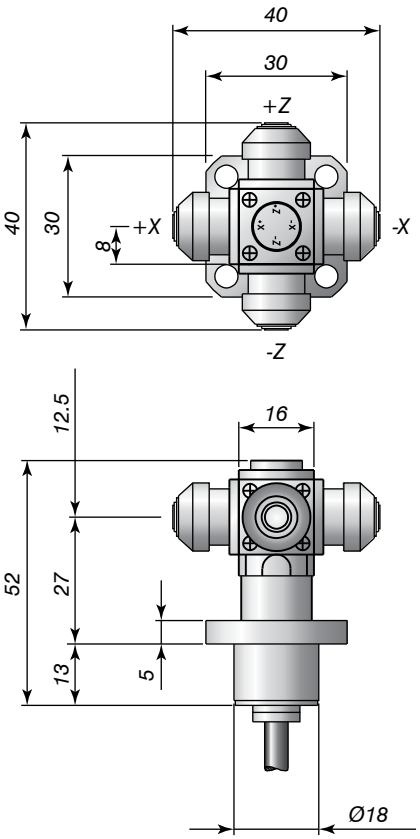




With integrated interface

The T18 is a compact touch probe for tool checks. Thanks to its versatility, it may be configured for use on lathes and machining centres for checking tools, predetermining the tool offset, prepositioning tools and tool wear compensation.
It is available in the version with integrated interface.

Technical specifications	
DATA TRANSMISSION	VIA CABLE
TOUCH DIRECTIONS *with straight stylus*	±X, ±Z
REPEATABILITY (2σ) *With standard 20 mm stylus and 600 mm/min speed*	1 µm
TRIGGER FORCE *With standard 20 mm stylus*	1.5 N
AXIAL TRIGGER FORCE	1 N
OVERTRAVEL *With standard 20 mm stylus*	5.5 mm
CABLE LENGTH	8 m
COUPLED WITH	E32U



A90K is a range of compact probes for tool checks on lathes and machining centres.
They offer excellent repeatability at high touch speeds and guarantee increased production quality and reduced cycle times.
The A90K probe range includes a wide variety of models for every application and represents the ideal solution for mass production applications and unsupervised processes.
The A90K range of products is fully compatible with the systems produced by other manufacturers so that pin-to-pin replacement is possible. The following tables illustrates the equivalence between Marposs and Metrol products.

MARPOSS	METROL
Q3PA9012012	H4A-08-05C
Q3PA9012016	H4A-12-77S
Q3PA9012029	H4A-12-136S
Q3PA9012030	H4A-12S
Q3PA9012101	H4A-12-20
Q3PA9012102	H34-30-03
Q3PA9012111	H4A-08-02A
Q3PA9013121	H4A-53-01S
Q3PA9015006	H4A-04-00
Q3PA9015103	H4A-12-21S
Q3PA9015104	H-4A-12-05H (H-4A-12-05S With inverter)
Q3PA9015114	H4A-18
Q3PA9015115	H4A-18-42S

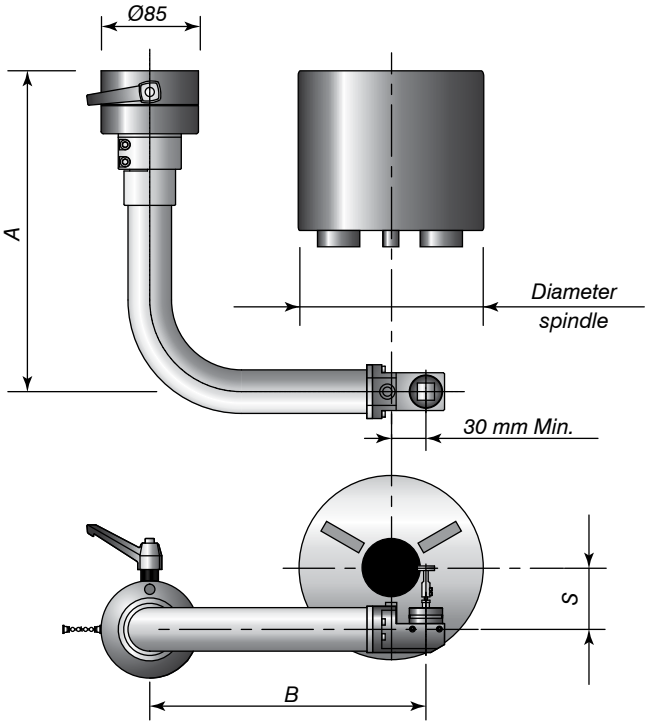
Marposs-Metrol equivalence table

	Q3PA9012012	Q3PA9012016	Q3PA9012029	Q3PA912080	Q3PA9012101
NUMBER OF CONTACTS	4				
TOTAL STROKE	2 mm				
Cleaning air	No				
REPEATABILITY (2σ)	1 µm				
TRIGGER FORCE	2 ÷ 3 N				
TOUCH SPEED	50 ÷ 200 mm/min				
Power supply	24 Vdc - 20mA max				
LED PRESENT	No				Yes - Norm. ON
OVERTRAVEL SIGNAL	No				
INTEGRATED INTERFACE	No				
CABLE *1 = lower / 2 = side*	1				

	Q3PA9012102	Q3PA9012111	Q3PA9013121	Q3PA9015001	Q3PA9015006
NUMBER OF CONTACTS	3	4			
TOTAL STROKE	2 mm				
Cleaning air	No				
REPEATABILITY (2σ)	1 µm				
TRIGGER FORCE	2 ÷ 3 N				
TOUCH SPEED	50 ÷ 200 mm/min				
Power supply	24 Vdc - 20mA max				
LED PRESENT	Yes - Norm. ON			No	
OVERTRAVEL SIGNAL	No				
INTEGRATED INTERFACE	No		Yes	No	
CABLE *1 = lower / 2 = side*	1				

	Q3PA9015101	Q3PA9015103	Q3PA9015104	Q3PA9015114	Q3PA9015115
NUMBER OF CONTACTS	4				
TOTAL STROKE	2 mm				
Cleaning air	No				
REPEATABILITY (2σ)	1 µm				
TRIGGER FORCE	2 ÷ 3 N				
TOUCH SPEED	50 ÷ 200 mm/min				
Power supply	24 Vdc - 20mA max				
LED PRESENT	Yes - Norm. OFF				
OVERTRAVEL SIGNAL	No				
INTEGRATED INTERFACE	No				
CABLE *1 = lower / 2 = side*	1				

PART CHECK



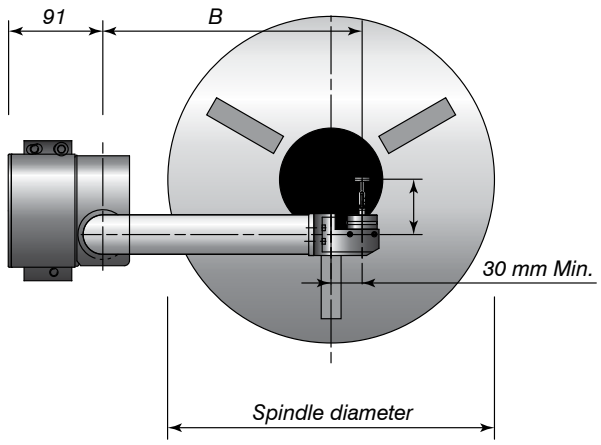
The Mida Set line is a range of dedicated removable lathe arms for presetting, length measurements, tool breakage monitoring, offset zeroing and monitoring.
The system consists of a fixed base that is secured permanently on the side of the machine spindle, and a removable arm, which is mounted on the base in the required position when necessary.
Repeatability is guaranteed by the coupling between the arms and the Mida probes.
The base features a watertight cover that protects the electrical connections from chips and coolant during the machining processes.
The modularity and flexibility of the system, the ease with which it can be installed mean that it is suitable for use on any type of machine, irrespective of the tools and and spindles.

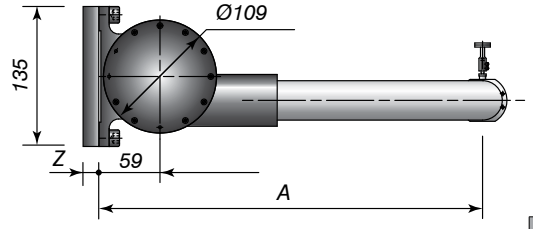
PART CHECK

		MIDA SET KIT							
		Tool size							
		16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	A [mm]	B [mm]
Spindle size	6"	•	•	•	•			250	211
	8"	•	•	•	•			280	241
	10"	•	•	•	•	•		325	290
	12"	•	•	•	•	•	•	355	290
	15"		•	•	•	•	•	455	355
	18"			•	•	•	•	510	375
	24"			•	•	•	•	580	450
	S [mm]	36	41	51	56	61	71		

Arm	Base	Interface	Accessories	Kit
MIDA SET 	**BASE CABLE** 	 **E32A**	 **STYLI**	**ARM BASE INTERFACE**

Technical specifications	
DATA TRANSMISSION	VIA CABLE
TOUCH DIRECTIONS *with TT30 probe - machine axes*	±X, ±Z
POSITIONING REPEATABILITY (2σ) *6" ÷ 15" spindle versions*	5 µm
POSITIONING REPEATABILITY (2σ) *18" ÷ 24" spindle versions*	8 µm





MTE is a dedicated fixed installation arm line for lathes for presetting, length measurements, tool breakage monitoring, offset zeroing and monitoring. The arm is moved into the measurement position by the machine operator (manual version) or automatically by the motor (electrical version).
When the arm is in the home position the probe is housed in a dedicated metallic box in order to protect it.
The arm positioning repeatability as it moves from the home to the operating position is guaranteed by the coupling between the arms and the Mida probes.
The modularity and flexibility of the system, the ease with which it can be installed mean that it is suitable for use on any type of machine, irrespective of the tools and and spindles.

PART CHECK

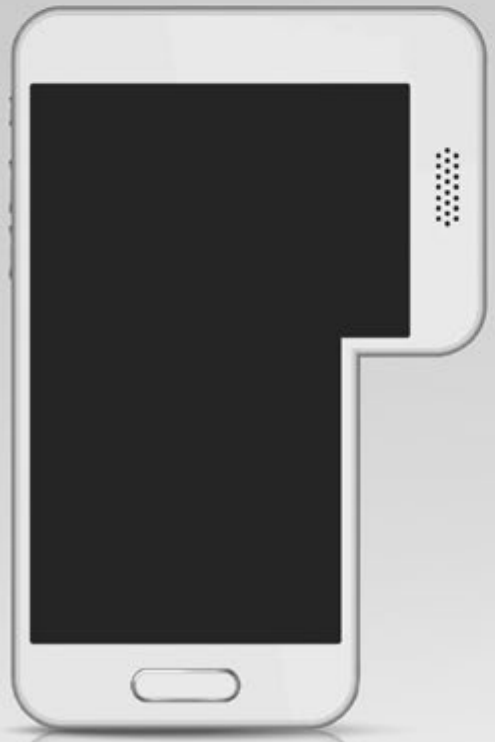
		MIDA TOOL EYE KIT							
		Tool size							
		16mm	20 mm	25 mm	32 mm	40 mm	50 mm	A [mm]	B [mm]
Spindle size	6"	•	•	•	•			250	172
	8"	•	•	•	•			286	202
	10"	•	•	•	•	•		335	251
	12"	•	•	•	•	•	•	368	251
	15"		•	•	•	•	•	400	296
	18"			•	•	•	•	469	336
	24"			•	•	•	•	555	411
	S [mm]	36	41	51	56	61	71		

Arm	Interface	Accessories	Kit
MTE electrical **MTE manual** 	 **E32A**	 **STYLI**	**ARM** **BASE** **INTERFACE**

Technical specifications	
DATA TRANSMISSION	VIA CABLE
TOUCH DIRECTIONS *with TT30 probe - machine axes*	±X, ±Z
POSITIONING REPEATABILITY (2σ) *6" ÷ 15" spindle versions*	5 µm
POSITIONING REPEATABILITY (2σ) *18" ÷ 24" spindle versions*	8 µm

MEASUREMENT ERROR

MEASUREMENT PRECISION



The Marposs **VOP40** multi-channel optical system automatically detects axis position to enable part inspection on machining centers and milling machines. It's the ideal solution for high-volume, multi-machine production environments. You get improved quality and reduced scrap. **Marposs means precision.**

www.marposs.com

MARPOSS

YOUR GLOBAL METROLOGY PARTNER

ACCESSORIES

Marposs supplies a wide range of accessories that may be used to adapt the solutions to every type of machine and specific customer request.
Supports and extensions that enable the probes to be used in difficult to reach points. A vast range of styli and fingers, the fruit of Marposs' experience in the field of measurements. A complete range of shanks for applications on machining centres, milling machines, lathes and turning centres.
Marposs has also developed software packages that can be used together with its contact and non contact touch probe systems. The Mida software applications are designed to make your Mida inspection probes, part checking probes and laser systems easy to use on every application, in order to increase production quality and efficiency.

STYLI

SHANKS

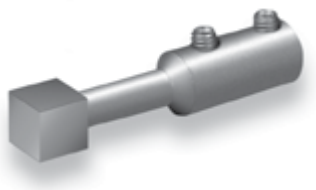
EXTENSIONS

STYLI

Marposs supplies a wide range of styli for part inspection and tool checks.
How to select the correct stylus for your applications:

1. The stylus must be as short as possible;
2. The diameter of the sphere must be as large as possible, since the greater the diameter the larger the finger rod and hence the greater the rigidity;
3. Reduce the use of joints such as pins and extensions as far as possible;
4. When it is necessary to use very long stylii, use the most rigid material possible (ceramic);
5. When the part is placed on a magnetic table, or there exists a risk of electrostatic discharge, use styli with ruby spheres and/or ceramic styli in order to guarantee electrical isolation.

Refer to the "probe accessories" brochure for more information.
Dedicated solutions available upon request.

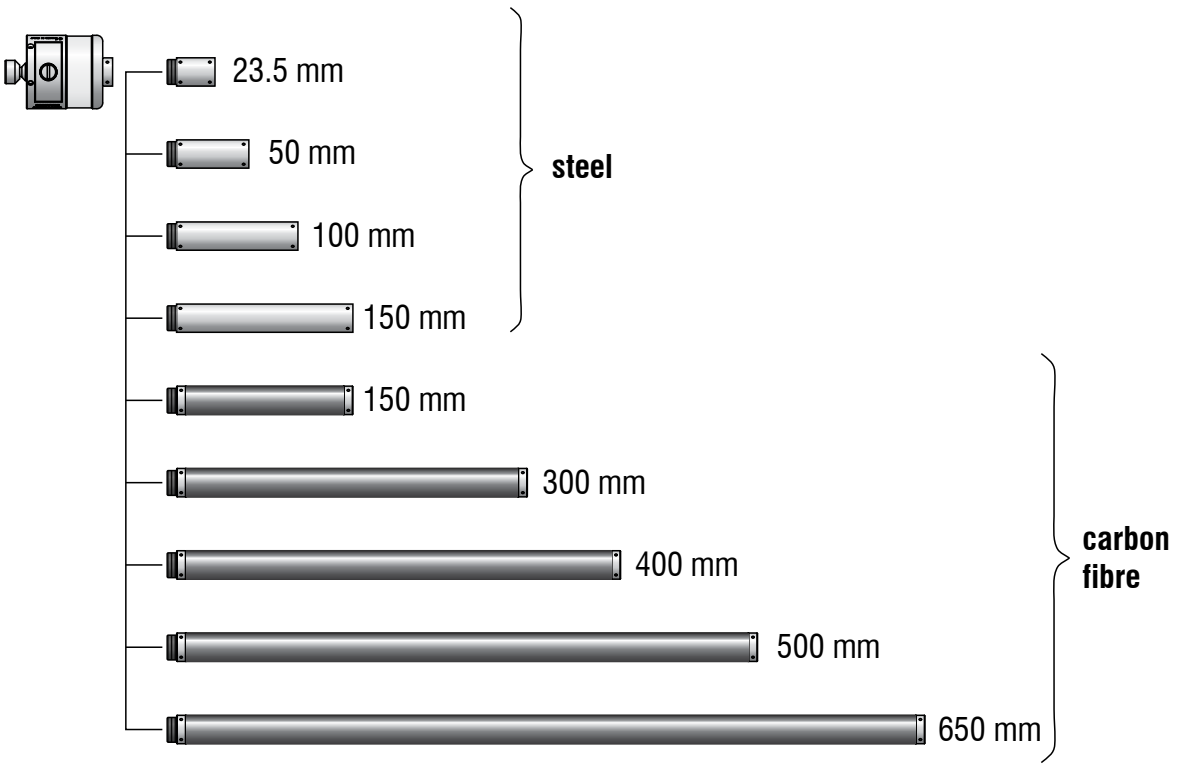
 Straight styli with steel or ceramic rod and tungsten carbide sphere	 Straight styli with ruby sphere
 Straight styli with steel and tip in tungsten carbide	 Cranked styli with steel rod and in tungsten carbide

EXTENSIONS

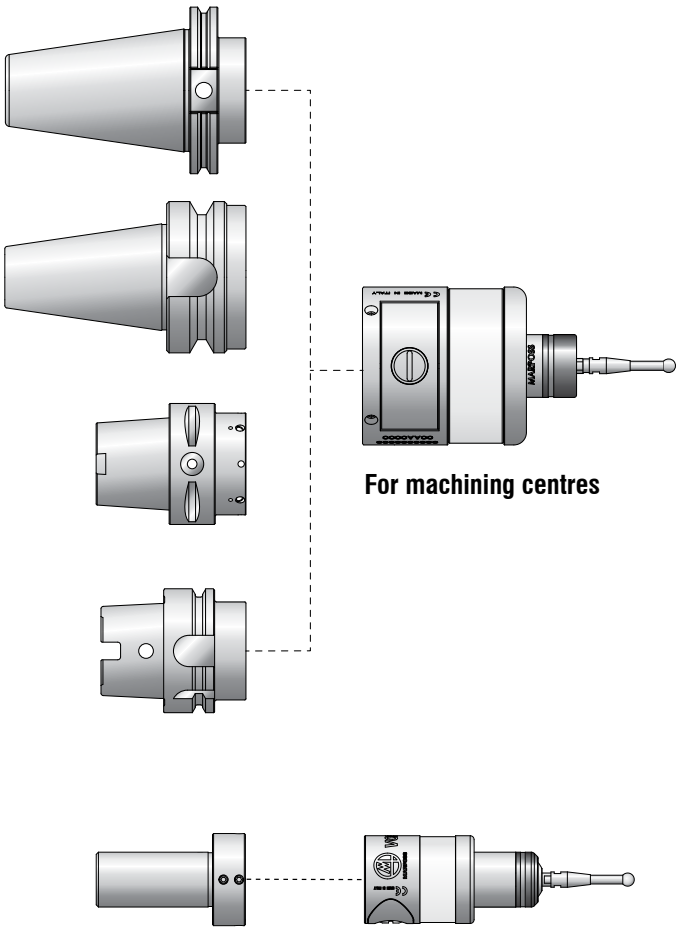
Extensions for WRP45, WRP60 and VOP60

In some applications it is not possible to perform the part inspection without using extensions between the signal transmitter and the probe. Marposs offers a range of solutions in steel or carbon fibre. The extensions are fully compatible with the T and TT range of probes. The following is a list of the available models. Different lengths may be obtained by connecting multiple extensions together

For WRPP60 and VOP60 the maximum length that may be obtained is 1 metre.



SHANKS

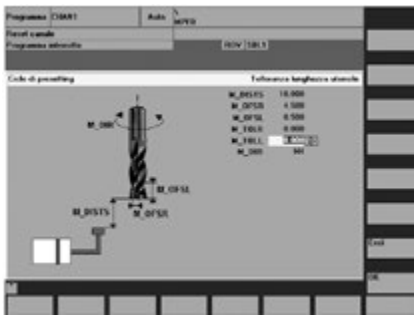


For machining centres

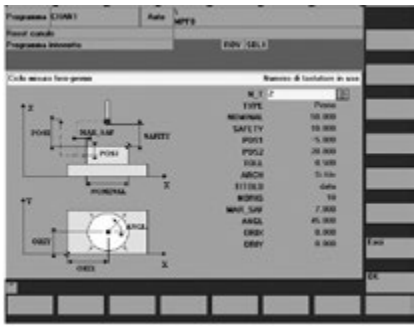
For lathes

Marposs has developed a complete range of shanks and installation flanges for its touch probe systems for every type of machining centre, milling machine, lathe and turning centre. These products are compatible with most commercially available standards.

PRODUCT	SHANKS/VDI
WRP60 VOP60	*part number 2027885200 → 214:* HSK 63 AC - E - F HSK 80 AC HSK 100 AC BT 40 BT 50 ISO 40 ISO 50 CAPTO C5 - C6 - C8 VDI Ø25 mm
VOP40	*part number 2027885150 → 167:* HSK 32 AC - E HSK 40 AC - E HSK 50 AC HSK 63 AC ISO 25 A - E ISO 30 ISO 40 CAPTO C3 - C4 - C5 VDI Ø25 mm
WRP45	*part number 2027885050 → 090:* HSK 40 AC - E HSK 50 AC - E HSK 63 AC - E - F HSK 80 AC - E HSK 100 AC BT 30 BT 40 BT 50 ISO 40 ISO 50 CAPTO C5 - C6 - C8 - C4 VDI Ø25 mm
VOP40L	*part number 2027885167 → 168:* Ø10 VDI Flange Ø25 VDI Flange



Example of part measurement program



Example of tool measurement program

In response to the growing importance of measurements and quality/process controls on machine tools in modern production companies, Marposs has developed new software packages for its contact and non contact probing systems. The Marposs software applications have been designed to make Mida part/tool control probes and laser systems, as well as the corresponding measurement cycles for a wide variety of applications for machining centres, milling machines, lathes and turning centres, easier to use, thereby optimising production efficiency.

The evolution of machine measurements is achieved through increasingly accurate measurement of the position of the part and the geometrical dimensions and form of the finished part, as well as the configuration and control of the tools used in the process. In order to satisfy the requirements stated above, Marposs has created a family of five software packages for the machine tool market that are designed to be used with our touch probes. The probing software consists of packages used on the following types of machine tools: machining centres, milling machines, lathes, turning centres. The cycles designed to check the parts include a series of macros for measuring holes, shafts, surfaces, edges, pockets, shoulders and stock. The tool check applications can be used to check length, radius, axial integrity, single cutting edge control, machine axes thermal drift, run out.

SOFTWARE

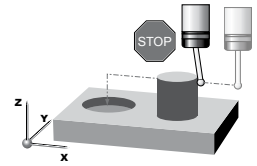
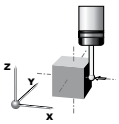
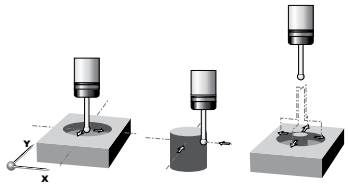
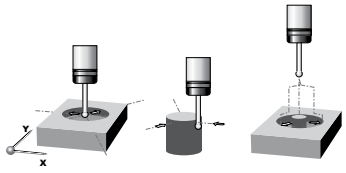
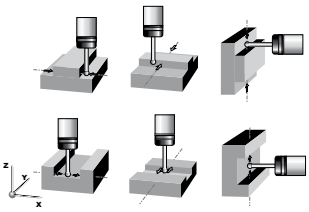
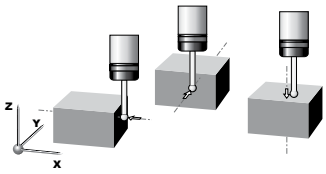
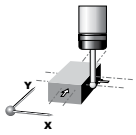
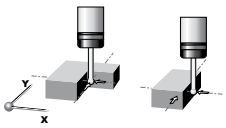
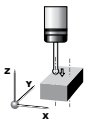
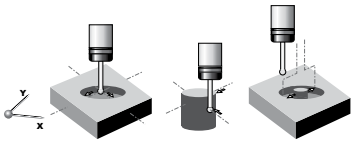
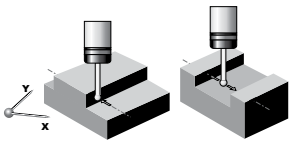
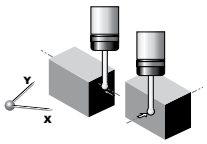
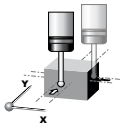
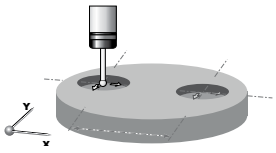
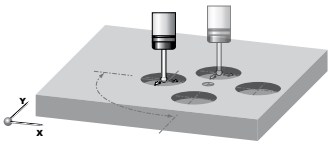
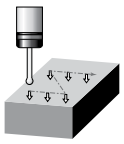
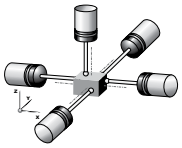
PROBING SOFTWARE			
Machine type	Application	Levels	Cycles
Machining centres and milling machines	Part inspection	Basic Inspection	Protected probe positioning
			Probe calibration
			Hole and shaft measurements (90°)
			Measurement of bores and shafts at 3 points
			Rib measurements
			Pocket measurements
			Single surface measurement
			Angular measurements in XY plane
			Positioning an edge
		Premium Inspection	Angular measurements in XZ and YZ planes
			Measurement of holes and shafts with angular axes
			Measurement of pockets and shoulders with angular axes
			Measurement of single surfaces with angular axes
			Positioning an edge with coordinate rotation angle
		Ultimate Inspection	Pitch measurement between two bores/shafts
			Measurement of three/four holes/shafts
			Stock metal measurement
			Probe alignment for multi-axis applications
			Programming example
	Tool checking		Probe calibration
			Tool length and radius measurement/control
			Tool axial integrity control
Lathes and turning centres	Part inspection		Protected probe positioning
			X axis calibration
			Z axis calibration
			Measurement with single touch on X axis
			Measurement with single touch on Z axis
			Groove and shoulder measurements on X axis
			Groove and shoulder measurements on Z axis
			Diametral measurements
			Measurement of centre with C axis movement
			Measurement of grooves and keyslots in Z axis with centre search
			Measurement of holes and cylinders in X axis with centre search
			Programming example
	Tool checking		Probe calibration
			Tool measurement

SOFTWARE FOR LASERS			
Machine type	Application	Levels	Cycles
Common cycles for machining centres, lathes and turning centres	Tool checking		Calibrating the Mida laser
			Axial and non axial tool length and radius measurements
			Single cutting edge tool integrity control at a single point or along a rectilinear profile
			Single cutting edge tool integrity check along a complex profile
			Tool circular sector check
			Axial tool breakage control
			Disk mill presetting
			Axis thermal drift compensation
			Boring bar measurements
			Axial tool breakage control with drop filtering
			Additional functions
Dedicated cycles for turning centres	Tool checking		Tool presetting for standard turning
			Presetting lathe tools for threading
			Presetting lathe tools for relief

PROBING SOFTWARE FOR MACHINE CENTRE AND MILLING MACHINES

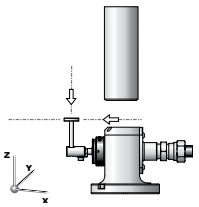
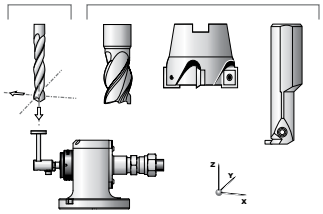
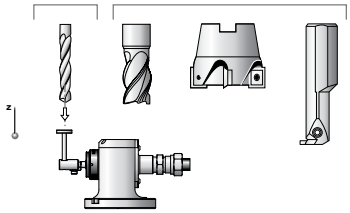
Working centres and milling machines

Part inspection

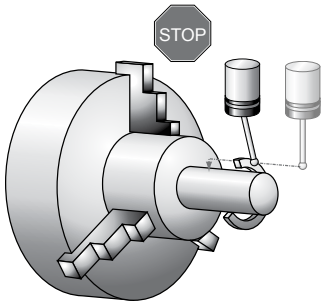
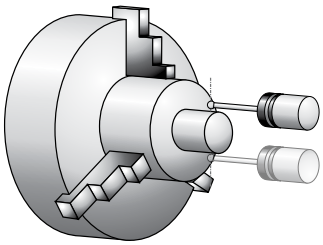
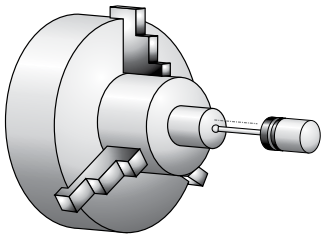
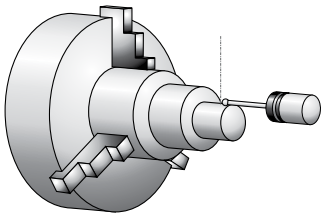
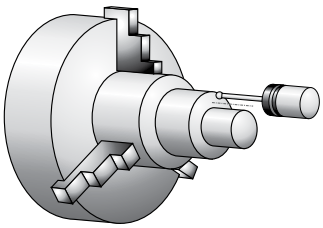
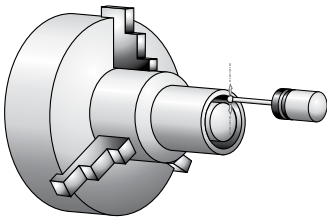
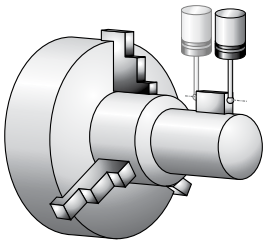
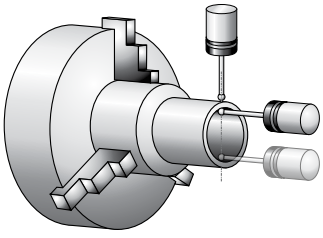
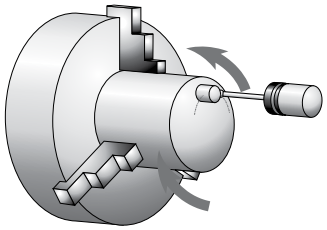
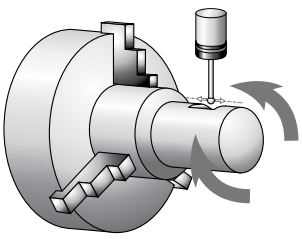
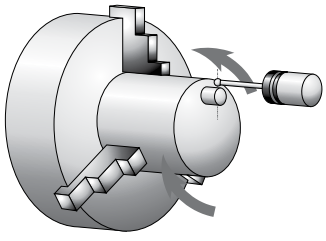
Basic Inspection	 Protected probe positioning	 Probe calibration	 Measurement of bores and shafts with 90° axes
	 Measurement of bores and shafts at 3 points and with programmable touch angles	 Rib and pocket measurements	 Single surface measurements
	 Angular measurements in XY plane	 Positioning an edge	
Premium Inspection	 Angular measurements in XZ and YZ planes	 Measurement of holes and shafts with angular axes	 Measurement of pockets and shoulders with angular axes
	 Measurement of single surfaces with angular axes	 Positioning an edge with coordinate rotation angle	
Ultimate Inspection	 Pitch measurement between two bores/shafts	 Measurement of three/four holes/shafts	 Stock metal measurement
	 Probe alignment for multiple axis		

SOFTWARE

PROBING SOFTWARE FOR MACHINE CENTRE AND MILLING MACHINES

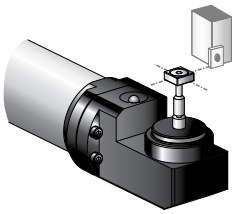
Working centres and milling machines	Tool checking			
		Probe calibration	Tool length and radius measurement/control	Tool axial integrity control

PROBING SOFTWARE FOR LATHES

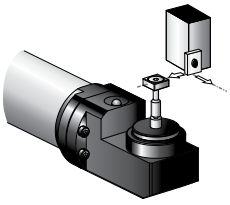
Lathes and Turning centres	Part inspection			
		Protected probe positioning	X axis calibration	Z axis calibration
				
		Measurement with single touch on X axis	Measurement with single touch on Z axis	Groove and shoulder measurements on X axis
				
		Groove and shoulder measurements on Z axis	Diametral measurements	Centre search with movement
				
		Z axis groove and keyslot measurements with centre search	Measurement of holes and cylinders in X axis with centre search	

PROBING SOFTWARE FOR LATHES

Lathes and Turning centres — Tool checking



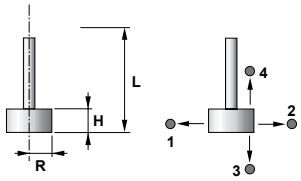
Probe calibration



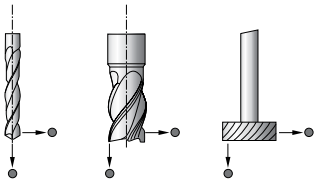
Tool measurement

LASER SOFTWARE FOR LATHES, MILLING MACHINES AND TURNING CENTRES

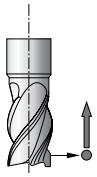
Common cycles for working centres, milling machines and turning centres — Tool checking



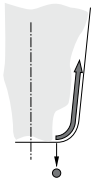
Calibrating the Mida laser



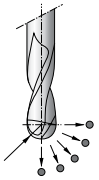
Axial and non axial tool length and radius measurements



Single cutting edge tool integrity control at a single point or along a rectilinear profile

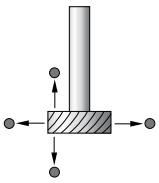


Tool integrity check along a complex profile

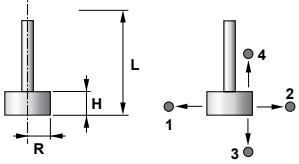


Tool circular sector check

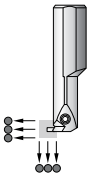
Axial tool breakage control



Disk mill presetting



Axis thermal drift compensation

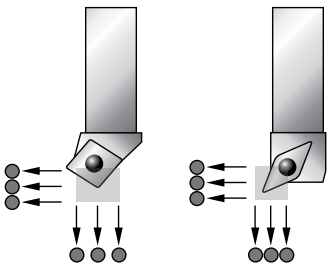


Boring bar measurements

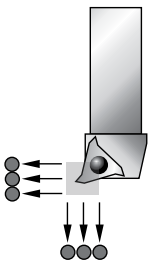
Axial tool breakage control with drop filtering

LASER SOFTWARE FOR TURNING CENTRES

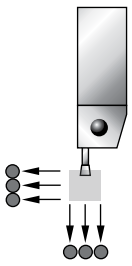
Dedicated cycles for turning centres — Tool checking



Tool presetting for standard turning



Presetting lathe tools for threading



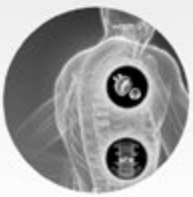
Presetting lathe tools for relief

KEEP AN EYE ON YOUR TOOL

mida ULTRA PRECISION PROBING

Marposs **Diamond** systems redefine the rules of on-machine tool measurement, where precision requirements are pushed to the limits daily. **VTS**, the Diamond Visual Tool Setter, is ideal for measuring micro-tools used for mold production, guaranteeing high cutting precision and production optimization.



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PART CODES

PART PROBING	
WRP45	
P1ARWH0000	WRP45 complete application kit - Machining centre
P1BRW00000	WRP45 complete application kit - Milling machine
P1ARW00000	WRP45 replacement E86/E86N complete kit - Machining centre
P1ARW00001	WRP45 replacement E86/E86N kit w/out probe
P1ARW00002	WRP45 replacement E86/E86N kit w/out probe axial connector
P1ARW00003	WRP45 replacement E86/E86N kit w/out probe with T36 adapter
P1SRW00000	WRP45 kit with T25G probe - Machining centre
P1SRW00001	WRP45 kit with T25S probe - Lathe
P1SRW00002	WRP45 kit with TT25 probe - Milling machine
P1SRW00003	WRP45 kit with TT30 probe - Small machine
P1SRW00004	WRP45 kit with TL25 probe - M/C low force
P1SRW00005	WRP45 kit with TT25H probe - Milling high force
WRP60	
P1ARW00030	WRP60 replacement E86 complete kit - Machining centre
P1ARW00031	WRP60 replacement E86 kit w/out probe
P1SRW00030	WRP60 kit with T25G probe - Machining centre
P1SRW00031	WRP60 kit with T25S probe - Lathe
P1SRW00032	WRP60 kit with TT25 probe - Milling machine
P1SRW00034	WRP60 kit with TL25 probe - M/C low force
P1SRW00035	WRP60 kit with TT25H probe - Milling high force
VOP40	
P1AIV00050	VOP40 full kit
P1SIV00003	VOP40 probe
P1AIV00004	VOP40 replacement E83/OP32 complete kit
VOP40P	
P1SIV00000	VOP40P probe
P1AIVP0000	VOP40 full kit
VOP40L	
6871844240	VOP40L probe
P1AIV00005	VOP40L replacement E83TXL complete kit
VOP60	
6871842000	VOP60 with T25G
6871842001	VOP60 with TL25G
6871842002	VOP60 with TT25
6871842003	VOP60 with T25S
P1AIV00000	VOP60 replacement E83 kit (with T25)
P1AIV00001	VOP60 replacement E83 kit (w/o probe)
VOP60M / VOP40M	
6871842100	VOP60 modular without probe
6871844241	VOP40 modular without probe
WRG	
please contact Marposs office	
T25P	
3427912010	T25P Probe
T25	
3415335200	T25 with rubber gasket
3424306040	TL25 T25 with rubber gasket and low trigger force
3415335201	T25S with metal shield
3424306041	TL25S with metal shield and low trigger force

PART CODES

TT25	
3424310000	TT25
3424310100	TT25h with high trigger force
PROBE SUPPORTS	
2915335060	Support with axial adjustment for T25/TT25 probe
2915335070	Support with angle adjustment for T25/TT25 probe
2915335020	Threaded fixed support for T25/TT25 probe
2915335043	6 m threaded fixed support for T25P probe
2915335053	12 m threaded fixed support for T25P probe
2915335037	Fixed support with connector flange for T25/TT25 probe
2915335041	6 m fixed support with connector flange for T25P probe
2915335049	12 m fixed support with connector flange for T25P probe
2919845005	Fixed support for T25/TT25 probe
E32U	
8303290081	E32U electronic interface
WRI	
P1SRW60000	WRI Kit with side connector
P1SRW60001	WRI Kit with rear connector
CABLE	
6180890104	Connection cable 5 m
6180890112	Connection cable 10 m
6180890103	Connection cable 15 m
6180890105	Connection cable 30 m
VOI	
P1SIV70000	VOI Kit with side connector
P1SIV70001	VOI Kit with rear connector

TOOL SETTING	
TLS	
Q3PTLS10290	TLS NO probe contact - NC 30 V 20 mA probe output - lateral air inlet
Q3PTLS11352	TLS NC probe contact - NC 24 V 20 mA probe output - downside air inlet
Q3PTLS11393	TLS NC probe contact - NO 30 V 20 mA with internal interface probe output - lateral air inlet
Q3PTLS11304	TLS NC probe contact - NC 24 V 20 mA probe output - lateral air inlet
Q3PTLS12094	TLS NC probe contact - lateral air inlet
Q3PTLS12107	TLS frontal LED - right-hand air pipe
Q3PTLS12109	TLS frontal LED - right-hand air pipe
Q3PTLS12110	TLS left-hand LED - left-hand cable side air pipe
Q3PTLS12111	TLS left-hand LED - left-hand frontal side air pipe
Q3PTLS12108	TLS right- and left-hand LED - right-hand air pipe
TS30	
3927877500	TS30 with protection, 40 mm contact disk, 8m cable
TS30 90°	
P1SC600001	TS30 90° w/ cubic stylus full kit
P1SC600003	TS30 90° w/ cylindrical stylus full kit
3927877505	TS30 90° probe
VOTS	
P1SIVT0000	VOTS vertical with axial clamping
P1SIVT0001	VOTS vertical with lateral clamping
P1SIVT0003	VOTS horizontal with axial clamping
P1SIVT0004	VOTS horizontal with lateral clamping
P1SIVT0006	VOTS 90 with central fixing screw and alignment system

PART CODES

WRTS	
P1SRWT0001	WRTS with mounting brackets and 40 mm contact disk
P1SRWT0000	WRTS with centralised mounting and 40 mm contact disk
ML75P Stand Alone Pico	
0T62000001	ML75P PICO - D32 L136 H43 lateral connect. - 10 m cable straight connector - electronic interface with RS232
0T62000051	ML75P PICO - D32 L136 H43 lateral connect. - 10 m cable with 90° connector- electronic interface with RS232
0T62000081	ML75P PICO - D32 L136 H43 lateral connect. - electronic interface with RS232
ML75P Stand Alone Lateral Connector	
0T63000001	ML75P SA - D48 L165 H60 lateral connect. - 10 m cable with straight connector - electronic interface with RS232
0T63000011	ML75P SA - D48 L165 H60 lateral connect. - 20 m cable with straight connector - electronic interface with RS232
0T63000051	ML75P SA - D48 L165 H60 lateral connect. - 10 m cable with 90° connector - electronic interface with RS232
0T63000081	ML75P SA - D48 L165 H60 lateral connect. - electronic interface with RS232
0T63050001	ML75P SA - D48 L165 H60 lateral connect. - 10 m cable w/out protection straight connector - electronic interface with RS23
0T65000001	ML75P SA - D98 L215 H60 lateral connect. - 10 m cable with straight connector - electronic interface with RS232
0T65000011	ML75P SA - D98 L215 H60 lateral connect. - 20 m cable with straight connector - electronic interface with RS232
0T65000051	ML75P SA - D98 L215 H60 lateral connect. - 10 m cable with 90° connector - electronic interface with RS232
0T65000061	ML75P SA - D98 L215 H60 lateral connect. - 20 m cable with 90° connector - electronic interface with RS232
0T65000081	ML75P SA - D98 L215 H60 lateral connect. - electronic interface with RS232
0T65000751	ML75P SA - D98 L215 H131 lateral connect. - 10 m cable with 90° connector - electronic interface with RS232
0T65002001	ML75P SA - D98 L215 H60 lateral connect. w/out mechanical shutter - 10 m cable with straight connector - electronic interface with RS232
0T65002051	ML75P SA - D98 L215 H60 lateral connect. w/out shutter - 10 m cable with 90° connector - electronic interface with RS232
0T65002081	ML75P SA - D98 L215 H60 lateral connect. w/out mechanical shutter - electronic interface with RS232
0T67000001	ML75P SA - D178 L295 H60 lateral connect. - 10 m cable with straight connector - electronic interface with RS232
0T67000011	ML75P SA - D178 L295 H60 lateral connect. - 20 m cable with straight connector - electronic interface with RS232
0T67000021	ML75P SA - D178 L295 H60 lateral connect. - 30 m cable with straight connector - electronic interface with RS232
0T67000051	ML75P SA - D178 L295 H60 lateral connect. - 10 m cable with 90° connector - electronic interface with RS232
0T67000061	ML75P SA - D178 L295 H60 lateral connect. - 20 m cable with 90° connector - electronic interface with RS232
0T67000071	ML75P SA - D178 L295 H60 lateral connect. - 30 m cable with 90° connector - electronic interface with RS232
0T67000081	ML75P SA - D178 L295 H60 lateral connect. - electronic interface with RS232
0T67002081	ML75P SA - D178 L295 H60 lateral connect. w/out mechanical shutter - electronic interface with RS232
0T69000021	ML75P SA - D298 L415 H60 lateral connect. - 30 m cable with straight connector - electronic interface with RS232
0T69000051	ML75P SA - D298 L415 H60 lateral connect. - 10 m cable with 90° connector - electronic interface with RS232
ML75P Stand Alone Bottom Connector	
0T63300001	ML75P SA - D48 L165 H60 bottom connect. - 10 m cable with straight connector - electronic interface with RS232
0T63300011	ML75P SA - D48 L165 H60 bottom connect. - 20 m cable with straight connector - electronic interface with RS232
0T63300081	ML75P SA - D48 L165 H60 bottom connect. - electronic interface with RS232
0T65300001	ML75P SA - D98 L215 H60 bottom connect. - 10 m cable with straight connector - electronic interface with RS232
0T65300011	ML75P SA - D98 L215 H60 bottom connect. - 20 m cable with straight connector - electronic interface with RS232
0T65300081	ML75P SA - D98 L215 H60 bottom connect. - electronic interface with RS232
0T67300001	ML75P SA - D178 L295 H60 bottom connect. - 10 m cable with straight connector - electronic interface with RS232
0T67300011	ML75P SA - D178 L295 H60 bottom connect. - 20 m cable with straight connector - electronic interface with RS232
0T67300021	ML75P SA - D178 L295 H60 bottom connect. - 30 m cable with straight connector - electronic interface with RS232
0T67300051	ML75P SA - D178 L295 H60 bottom connect. - 10 m cable with 90° connector - electronic interface with RS232
0T67300061	ML75P SA - D178 L295 H60 bottom connect. - 20 m cable with 90° connector - electronic interface with RS232
0T67300071	ML75P SA - D178 L295 H60 bottom connect. - 30 m cable with 90° connector - electronic interface with RS232
0T67300081	ML75P SA - D178 L295 H60 bottom connect. - electronic interface with RS232
0T69300021	ML75P SA - D298 L415 H60 bottom connect. - 30 m cable with straight connector - electronic interface with RS232
0T69300071	ML75P SA - D298 L415 H60 bottom connect. - 30 m cable with 90° connector - electronic interface with RS232

PART CODES

ML75P Stand Alone Frontal Connector	
0T63500001	ML75P SA - D48 L165 H60 frontal connect. - 10 m cable with straight connector - electronic interface with RS232
0T63500051	ML75P SA - D48 L165 H60 frontal connect. - 10 m cable with 90° connector - electronic interface with RS232
0T63500081	ML75P SA - D48 L165 H60 frontal connect. - electronic interface with RS232
0T65500001	ML75P SA - D98 L215 H60 frontal connect. - 10 m cable with straight connector - electronic interface with RS232
0T65500051	ML75P SA - D98 L215 H60 frontal connect. - 10 m cable with 90° connector - electronic interface with RS232
0T65500081	ML75P SA - D98 L215 H60 frontal connect. - electronic interface with RS232
0T67500001	ML75P SA - D178 L295 H60 frontal connect. - 10 m cable with straight connector - electronic interface with RS232
0T67500051	ML75P SA - D178 L295 H60 frontal connect. - 10 m cable with 90° connector - electronic interface with RS232
0T67500061	ML75P SA - D178 L295 H60 frontal connect. - 20 m cable with 90° connector - electronic interface with RS232
0T67500081	ML75P SA - D178 L295 H60 frontal connect. - electronic interface with RS232
ML75P Modular	
0T60100001	ML75P modular collimated - 10 m cables with straight connector - electronic interface with RS232
0T60100011	ML75P modular collimated - 20 m cables with straight connector - electronic interface with RS232
0T60100021	ML75P modular collimated - 30 m cables with straight connector - electronic interface with RS232
0T60100081	ML75P modular collimated - electronic interface with RS232
0T60110001	ML75P modular foc=300 mm - 10 m cables with straight connector - electronic interface with RS232
0T60210001	ML75P modular foc=250 mm - 10 m cables with straight connector - electronic interface with RS232
0T60310001	ML75P modular foc=350 mm - 10 m cables with straight connector - electronic interface with RS232
0T60410001	ML75P modular foc=500 mm - 10 m cables with straight connector - electronic interface with RS232
ML75P Special Versions	
0T63300003	ML75P SA - D48 L165 H60 bottom connect. w/ fixing plate - 10 m cable with straight connector - electronic interface with RS232
0T62300003	ML75P PICO - D48 L136 H60 bottom connect. w/ fixing plate - 10 m cable with straight connector - electronic interface with RS232
0T67000000	ML75P SA - D178 L295 H60 lateral connect. 3rd axis control (touch) - 10 m cable with straight connector - electronic interface with RS232
0T67000004	ML75P SA - D178 L295 H60 lateral connect. w/ touch and blower kit (hybrid) - 10 m cable with straight connector - electronic interface with RS232
0T66100001	ML75P SA - D683 L800 H60 lateral connector - Long version - 10 m cable with straight connector - electronic interface with RS232
0T68100001	ML75P SA - D883 L1000 H60 lateral connector - Long version - 10 m cable with straight connector - electronic interface with RS232
0T67000501	ML75P SA - D178 L295 H84,5 lateral connect. - 10 m cable with straight connector - electronic interface with RS232
0T67002501	ML75P SA - D178 L295 H84,5 lateral connect. w/out mechanical shutter - 10 m cable straight connector - electronic interface with RS232
0T67002551	ML75P SA - D178 L295 H84,5 lateral connect. w/out mechanical shutter - 10 m cable 90° connector - electronic interface with RS232
0T67300501	ML75P SA - D178 L295 H84,5 bottom connect. -10 m cable with straight connector - electronic interface with RS232
0T67300511	ML75P SA - D178 L295 H84,5 bottom connect. -20 m cable with straight connector - electronic interface with RS232
0T67300551	ML75P SA - D178 L295 H84,5 bottom connect. -20 m cable with 90° connector - electronic interface with RS232
0T67300581	ML75P SA - D178 L295 H84,5 bottom connect. - electronic interface with RS232
0T69000701	ML75P SA - D298 L415 H131 lateral connect. - 10 m cable with straight connector - electronic interface with RS232
ML105P	
Special codes on demand.	
TBD	
3P00100100	TBD with C-shaped bracket for machine assembly, adjustable focus, straight connector with 5 m cable with protection
3P00100200	TBD with C-shaped bracket for machine assembly, adjustable focus, straight connector with 15 m cable with protection
3P00100300	TBD with C-shaped bracket for machine assembly, adjustable focus, straight connector with 30 m cable with protection
3P00140100	TBD-HS with C-shaped bracket for machine assembly, adjustable focus, straight connector with 5 m cable with protection
3P00140110	TBD-HS with adjustable focus, straight connector with 5 m cable with protection
3P00140200	TBD-HS with C-shaped bracket for machine assembly, adjustable focus, straight connector with 15 m cable with protection
3P00140220	TBD-HS with C-shaped bracket for machine assembly, adjustable focus, optimized blower, straight connector with 5 m cable with protection
3P00140300	TBD-HS with C-shaped bracket for machine assembly, adjustable focus, straight connector with 30 m cable with protection
VTS	
P1ZV0N1100	VTS_HS essential application kit: VTS-SU connector “N”, 280 mm metal sheath, connecting cables 10 mt, VTS-EU
P1ZV1N1100	VTS_HS with NEMO application kit: VTS-S connector “N”, 280 mm metal sheath, 10 mt connecting cables, VTS-EU, NEMO
P1ZV2N1100	VTS_HS with CS160HI application kit: VTS-SU connector “N”, 280 mm metal sheath, 10 mt connecting cables, VTS-EU, CS160HI

PART CODES

T18	
3419825010	T18 probe
3419825100	T18 probe w/ integrated interface
A90K	
Q3PA9012012	Please refer to page #39
Q3PA9012016	
Q3PA9012029	
Q3PA9012080	
Q3PA9012101	
Q3PA9012102	
Q3PA9012111	
Q3PA9013121	
Q3PA9015001	
Q3PA9015006	
Q3PA9015101	
Q3PA9015103	
Q3PA9015104	
Q3PA9015114	
Q3PA9015115	
MIDA SET	
0244390xxx	xxx part code depend on the dimension of arm, please refer to page #40 table
MTE	
0248000xxx	manual version, xxx part code depend on the dimension of arm, please refer to page #41 table
0248100xxx	electric version, xxx part code depend on the dimension of arm, please refer to page #41 table
E32A	
8303222844	E32A electronic interface for manual MTE and Mida Set
8303222834	E32A electronic interface for electric MTE

ACCESSORIES	
STYLI	
3191910872	Straight stylus with ceramic stem and tungsten-carbide ball (L. 35; D. 6)
3191910873	Straight stylus with ceramic stem and tungsten-carbide ball (L. 40; D. 6)
3191910874	Straight stylus with ceramic stem and tungsten-carbide ball (L. 45; D. 6)
3191910871	Straight stylus with ceramic stem and tungsten-carbide ball (L. 70; D. 7)
3191910865	Straight stylus with ceramic stem and tungsten-carbide ball (L. 100; D. 6)
3191929210	Straight stylus with ceramic stem and tungsten-carbide ball (L. 100; D. 10)
3191910860	Straight stylus with ceramic stem and tungsten-carbide ball (L. 150; D. 7)
3191910811	Straight stylus with steel stem and tungsten-carbide ball (L. 25; D. 6)
3191910805	Straight stylus with steel stem and tungsten-carbide ball (L. 35; D. 6)
3191910815	Straight stylus with steel stem and tungsten-carbide ball (L. 50; D. 6)
3191910830	Straight stylus with steel stem and tungsten-carbide ball (L. 75; D. 6)
3191910840	Straight stylus with steel stem and tungsten-carbide ball (L. 100; D. 6)
3191910845	Straight stylus with steel stem and tungsten-carbide ball (L. 150; D. 7)
3191910911	Straight stylus with tungsten-carbide stem and ruby ball (L. 19; D. 2)
3191910910	Straight stylus with tungsten-carbide stem and ruby ball (L. 19.5; D. 1)
3191910912	Straight stylus with tungsten-carbide stem and ruby ball (L. 30; D. 3)
3191910868	Straight stylus with ceramic stem and ruby ball (L. 30; D. 4)
3191910866	Straight stylus with ceramic stem and ruby ball (L. 50; D. 4)
3191910819	Straight stylus with ceramic stem and ruby ball (L. 100; D. 6)
3191910870	Straight stylus with ceramic stem and tungsten-carbide ball (L. 75; D. 6)
3191910915	Straight stylus with carbon fiber stem and ruby ball (L. 150; D. 6)
for other type and models please refers to brochure D6C06100G0	

PART CODES

EXTENSION and OTHER	
2015335004	Additional shield for T25 / TL25 / T25P probes
2915335023	Probe extension 23.5 mm long for T25/TT25 probes
2915335100	Probe extension 50 mm long for T25 / TL25 / T25P probes
2915335105	Probe extension 75 mm long for T25/TT25 probes
2915335110	Probe extension 100 mm long for T25 / TL25 / T25P probes
2915335120	Probe extension 150 mm long for T25 / TL25 / T25P probes
2915335128	Carbon fiber probe extension 150 mm for T25 / TT25 / T25P
2915335129	Carbon fiber probe extension 300 mm for T25 / TT25 / T25P
2915335131	Carbon fiber probe extension 500 mm for T25 / TT25 / T25P
3015335010	90° degree adapter for T25 / TL25 / T25P probes
3015335012	90° degree adapter for TT30 probe
3015335011	Double 90° degree adapter for T25 / TL25 / T25P probes
2915335013	Front protection for T25G and TL25G
2915335012	Front protection for T25S and TL25S
2915335018	Spare parts kit for T25G and TL25G
2915335008	Spare parts kit for T25S and TL25S
1015340070	Ring adaptor for T25 and TL25 probes (to assembly the probe on T36 holders)
2915335060	Single axis adjustable holder for T25 / TL25 / T25P
2915335070	Rotating adjustable holder for T25 / TL25 / T25P
2915335020	Thread fixing holder for T25 / TL25 / T25P
2915335037	Front fixing holder for T25 / TL25 / T25P
2919845005	Rear fixing holder for T25 / TL25 / T25P
1019108005	Crash protection pin 15 mm
1019108038	Crash protection pin 8 mm
1015051100	Crash protection pin for grup screw stylus
1019825075	Crash protection pin for tool checking with T18 probe
1044957100	Crash protection pin for arms applications
1019108004	Adapter screws
SHANKS for WRP60 E VOP60	
2027885080	Adapting flange group P60 for shanks E83/E86
2027885214	VDI adapter D 25 mm
2027885200	P60 HSK63 A+C DIN69893
2027885201	P60 HSK63 E DIN69893
2027885202	P60 HSK63 F DIN69893
2027885203	P60 HSK80 A+C DIN69893 AIR
2027885204	P60 HSK100 A+C DIN69893 AIR
2027885205	P60 BT40 MAS403
2027885206	P60 BT50 MAS403
2027885207	P60 ISO40 DIN69871/A
2027885208	P60 ISO50 DIN69871/A
2027885209	P60 CAPTO C5
2027885210	P60 CAPTO C6 AIR
2027885211	P60 CAPTO C8 AIR

SHANKS FOR VOP40 and VOP40P	
2027885150	P40 BT30 MAS 403
2027885152	Flange group P40 E83/E86
2027885153	P40 BT40 MAS 403
2027885154	P40 ISO25 CON FASATURA
2027885155	P40 HSK25 E DIN 69893
2027885156	P40 HSK32 AC DIN 69893
2027885157	P40 HSK32 E DIN 69893
2027885158	P40 HSK40 AC DIN 69893
2027885159	P40 HSK40 E DIN 69893
2027885160	P40 HSK50 AC DIN 69893
2027885161	P40 HSK63 AC DIN 69893
2027885162	P40 ISO30 DIN 69871/A
2027885163	P40 ISO40 DIN 69871/A
2027885164	P40 CAPTO C3
2027885165	P40 CAPTO C4
2027885166	P40 CAPTO C5
2027885167	VDI adapter VOP40 with XY regulation D 25 mm
2027885168	VDI adapter VOP40 with XY regulation D 10 mm
SHANKS for WRP45	
2027885050	HSK40 A+C DIN 69893 35
2027885086	HSK40 E DIN 69893 with X/Y adj. 35
2027885051	HSK50 A+C DIN 69893 42
2027885074	HSK63 A+C DIN 69893 - Aria 44
2027885079	HSK50 E DIN 69893 44
2027885084	HSK63 E DIN 69893 44
2027885085	HSK63 F DIN 69893 44
2027885053	HSK80 A+C DIN 69893 48
2027885075	HSK100 A+C DIN 69893 - Aria 50
2027885056	CAPTO C5 36
2027885057	CAPTO C6 38
2027885058	CAPTO C8 46
2027885059	ISO40 DIN 69871A 31.8
2027885060	ISO50 DIN 69871A 31.8
2027885061	MAS 403 BT30 28
2027885062	MAS 403 BT40 33
2027885063	MAS 403 BT50 43
2027885065	Kennametal KM63 46
2027885078	VDI adapter WRP45 with xy regulation
2027885087	VDI adapter WRP with xy regulation D 16 mm
2027885088	VDI adapter WRP with xy regulation D 20 mm
2027885089	VDI adapter WRP with xy regulation D 3/4”
2027885090	VDI adapter WRP with xy regulation D 1”

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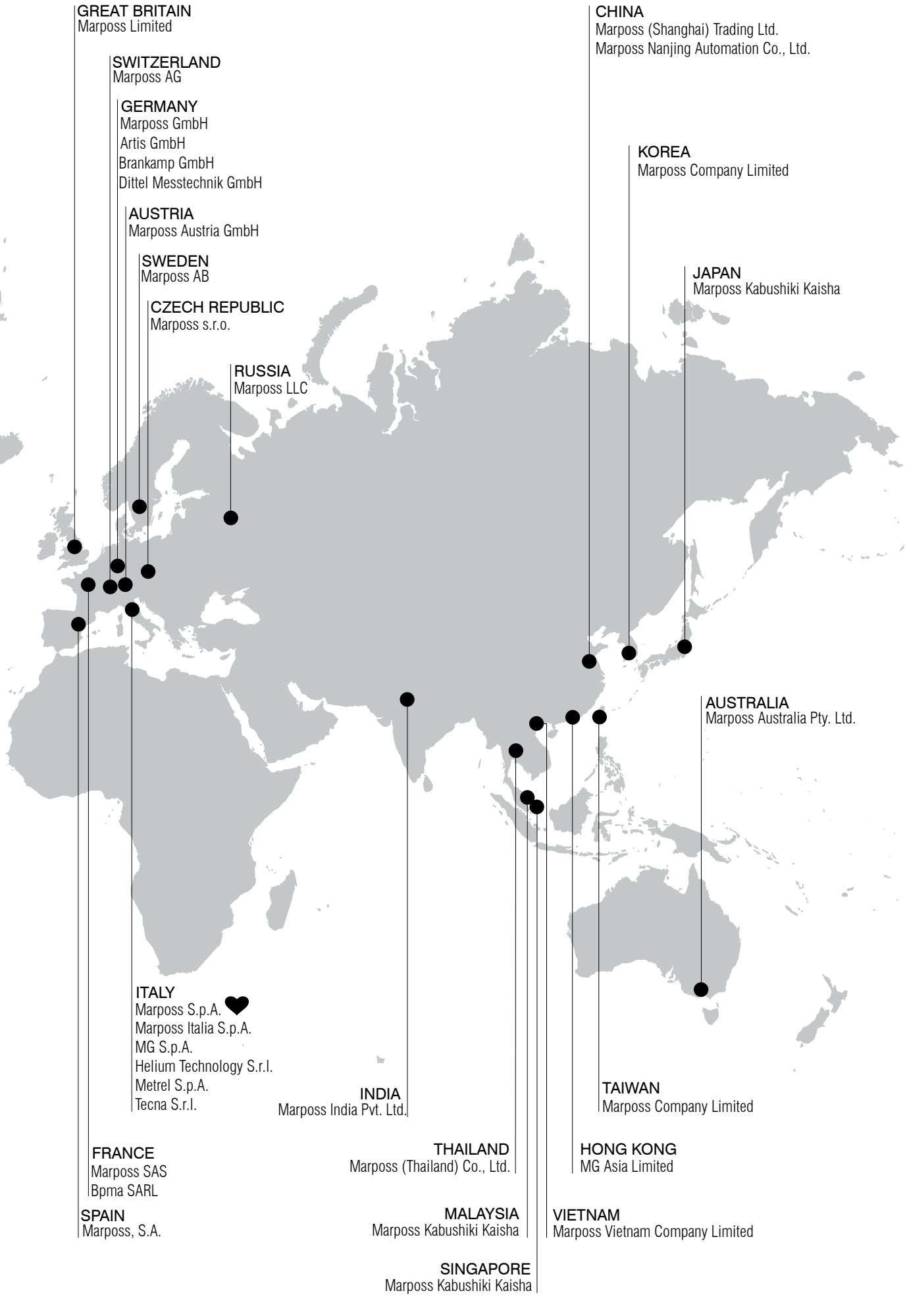
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