PRODUCT CATALOGUE

HEXAGON METROLOGY

PROBES & SENSORS

for Coordinate Measuring Machines



SHAPING CHANGE AT HEXAGON METROLOGY

The individual brands that compose Hexagon Metrology have been around for decades, in some cases over a century. They are the names you know and trust in the metrology industry. We are proud of our heritage and what Hexagon Metrology means today, and we are determined to continue to provide an authentic experience reflective of a company deeply rooted in technological innovation.

In order to align ourselves more closely with the strengths and synergies of our parent company, Hexagon, we have launched a rebrand of Hexagon Metrology. The updated brand strategy, which positions Hexagon Metrology as our primary go-to-market brand, showcases our unity and shared commitment to Hexagon's renewed focus and refined vision. This marks a new chapter in our history.

We believe the new brand captures our essence and will allow us to further leverage our strengths as a world-class metrology innovator. As your global partner and the people committed to your success, we will continue to evolve, grow and build upon our capabilities as we look toward the future.





BORN FROM EXPERIENCE

Hexagon Metrology's comprehensive range of probes, probe heads, styli changers and accessories for Coordinate Measuring Machines (CMMs) represents the latest evolution in probing technology for coordinate measuring.

It includes a broad array of standard equipment precisely designed and built to achieve fast and accurate measurement. The Hexagon Metrology Probing Systems enhances CMM performance and functionality, featuring:

- state of the art technology
- precise and reliable operation
- maximum application flexibility and outstanding usability
- quick and effective interchangeability
- extended modularity to configure optimised inspection systems to productivity requirements
- rugged, heavy-duty construction
- superior durability for operation in industrial environments

SENSORS FOR INDUSTRIAL METROLOGY

The Hexagon Metrology Probing System line provides the performance, productivity and reliability that only the producer and supplier of the world's widest and most comprehensive range of CMMs can ensure. All key components are engineered, manufactured and assembled by Hexagon Metrology and are designed to work together as an integrated product line for maximum application flexibility and enhanced CMM performance.

- PROBE HEADS
- TOUCH TRIGGER PROBES
- SCANNING PROBES
- OPTICAL PROBE
- LASER SCANNING SENSOR
- VISION SENSOR
- PROBE CHANGERS AND RACKS
- STYLI & ACCESSORIES

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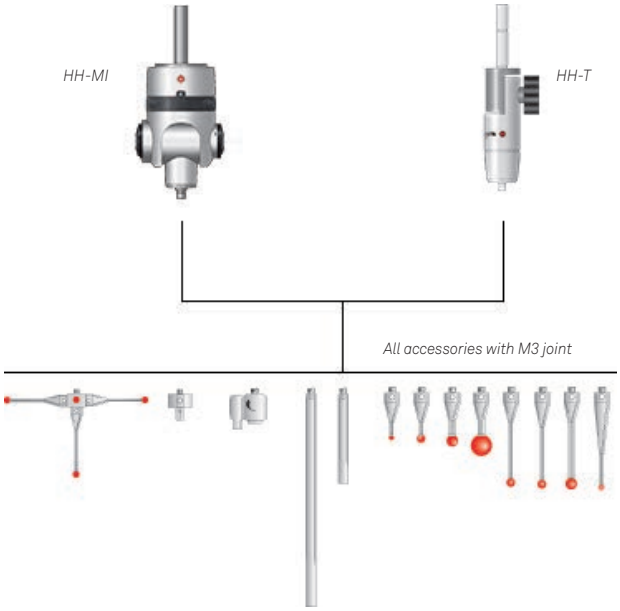
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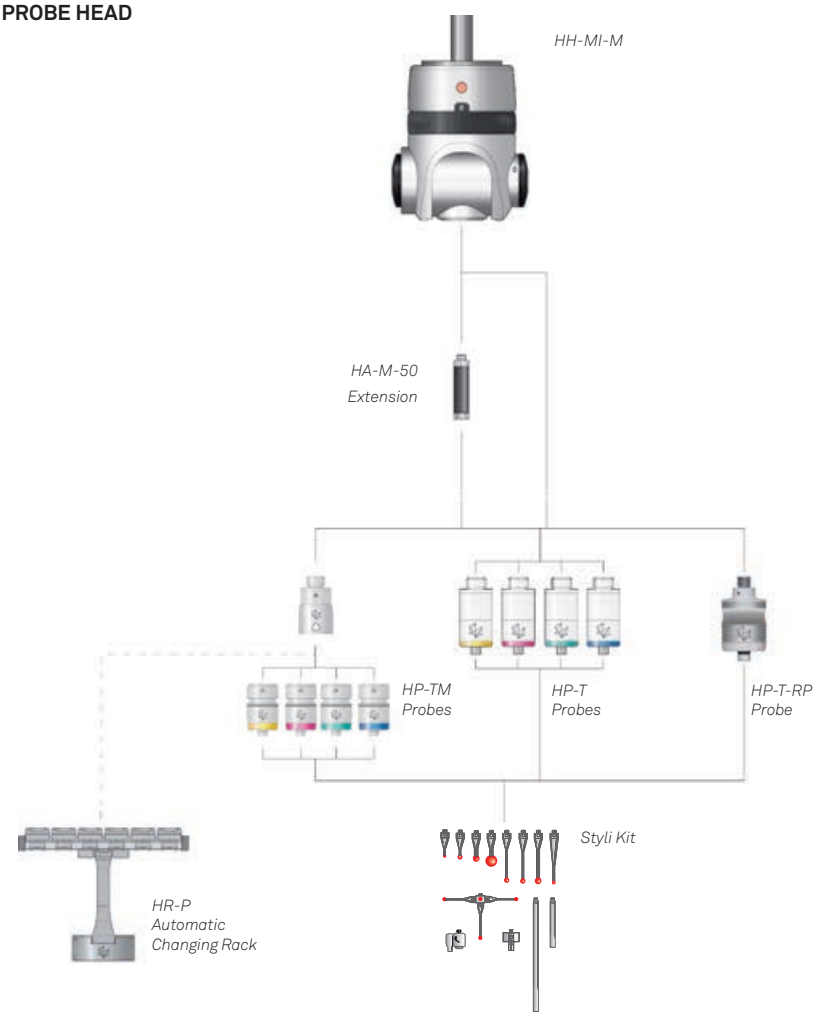
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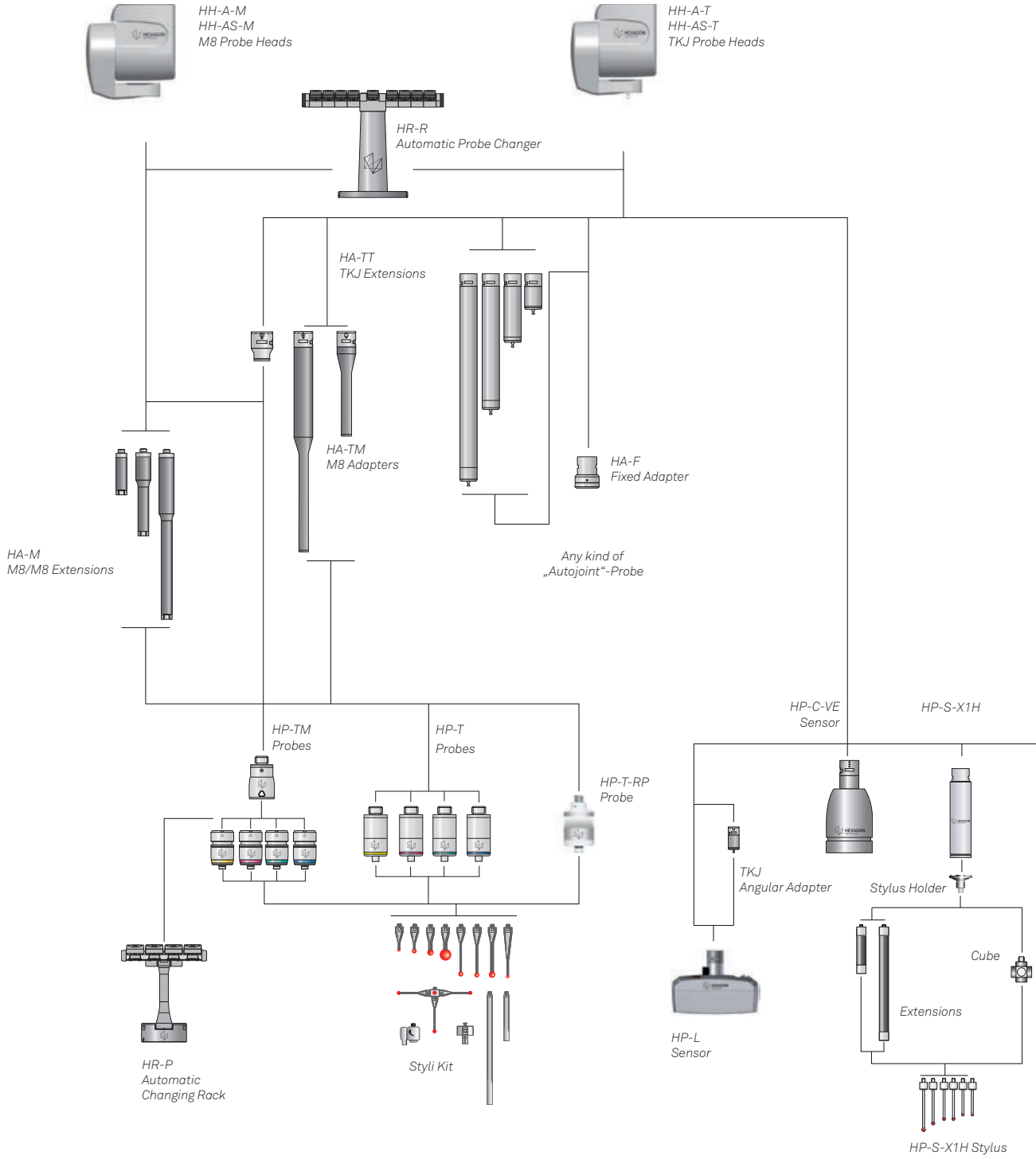
HH-T | HH-MI
PROBE HEADS



HH-MI-M
PROBE HEAD

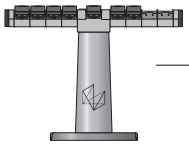


HH-A | HH-AS | HH-A-H-2.5 | HH-AS-H2.5 PROBE HEADS





HH-A-H2.5
HH-AS-H2.5
HDKJ Probe Heads



HR-R
Automatic Probe Changer
with HR-RH Modul



HA-HT
HDKJ to TKJ Adapter

HA-HM
HDKJ to M8 Adapter



HP-TM
Probes

HP-T
Probes

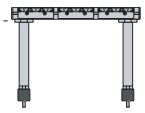
HP-T-RP
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HP-S-X1S

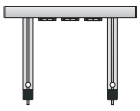
HP-S-X3T



HR-S-X1S
Automatic
Changing Rack



HR-S-X3
Automatic
Changing Rack

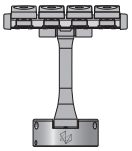




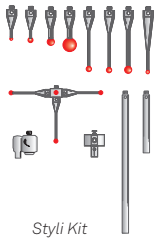
Stylus holder

HP-S-X1S Stylus

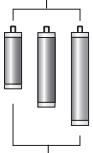
Standard-Styli Kit
and Additional Styli



HR-P
Automatic
Changing Rack



Styli Kit



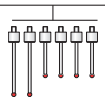
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Rotary Joint



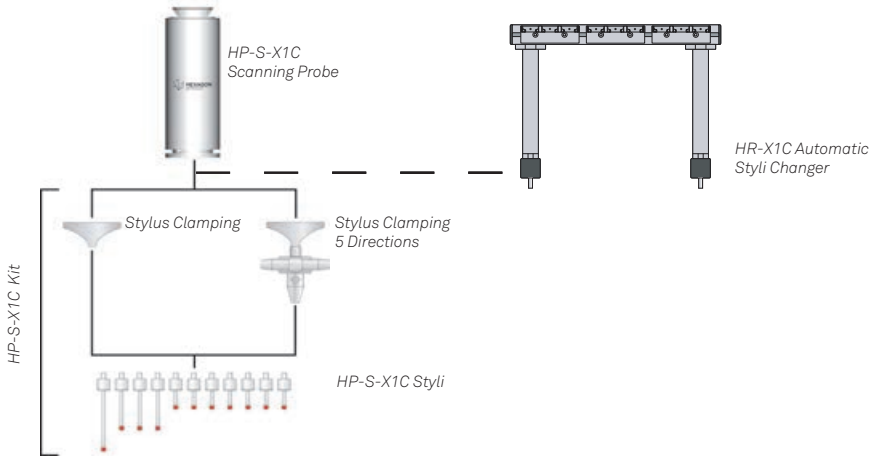
Stylus joint 0° - 90°

Cube

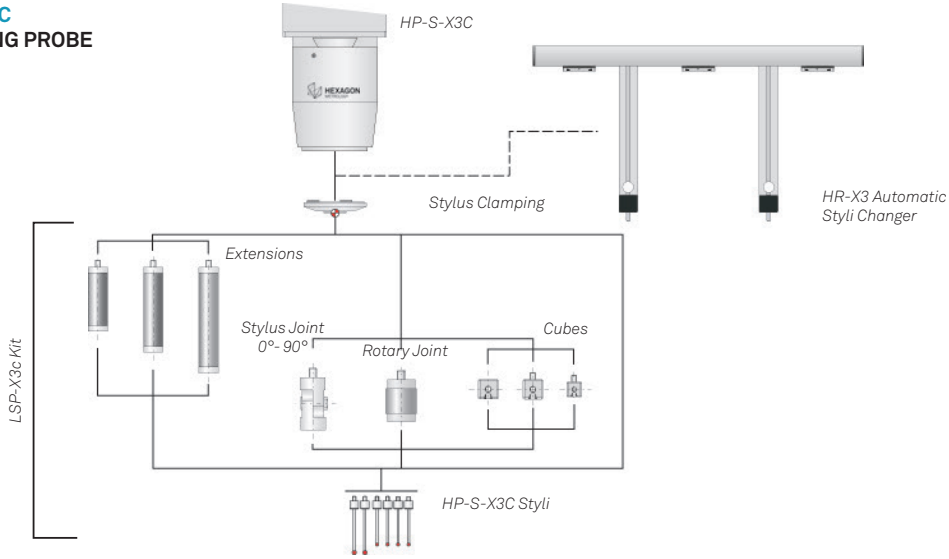


M5 Stylus

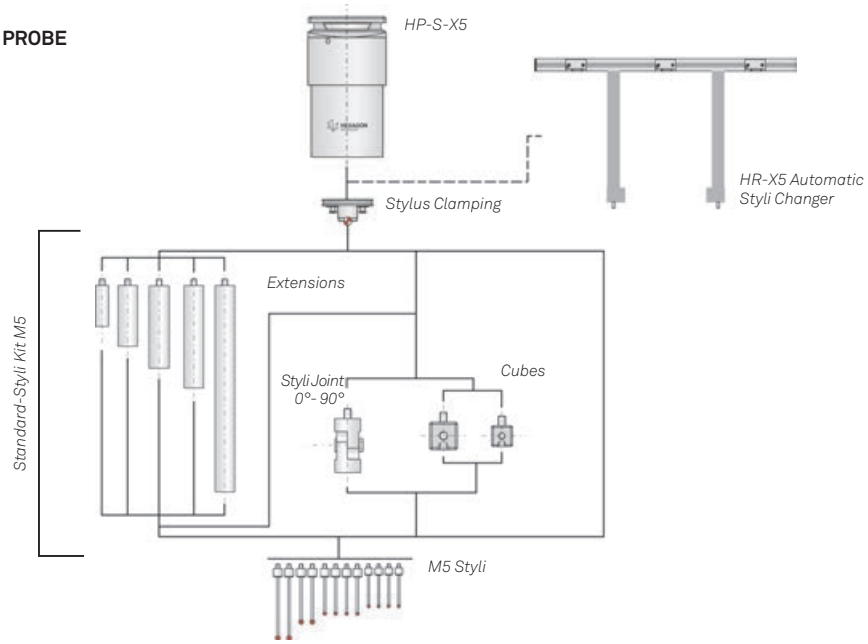
HP-S-X1C
SCANNING PROBE



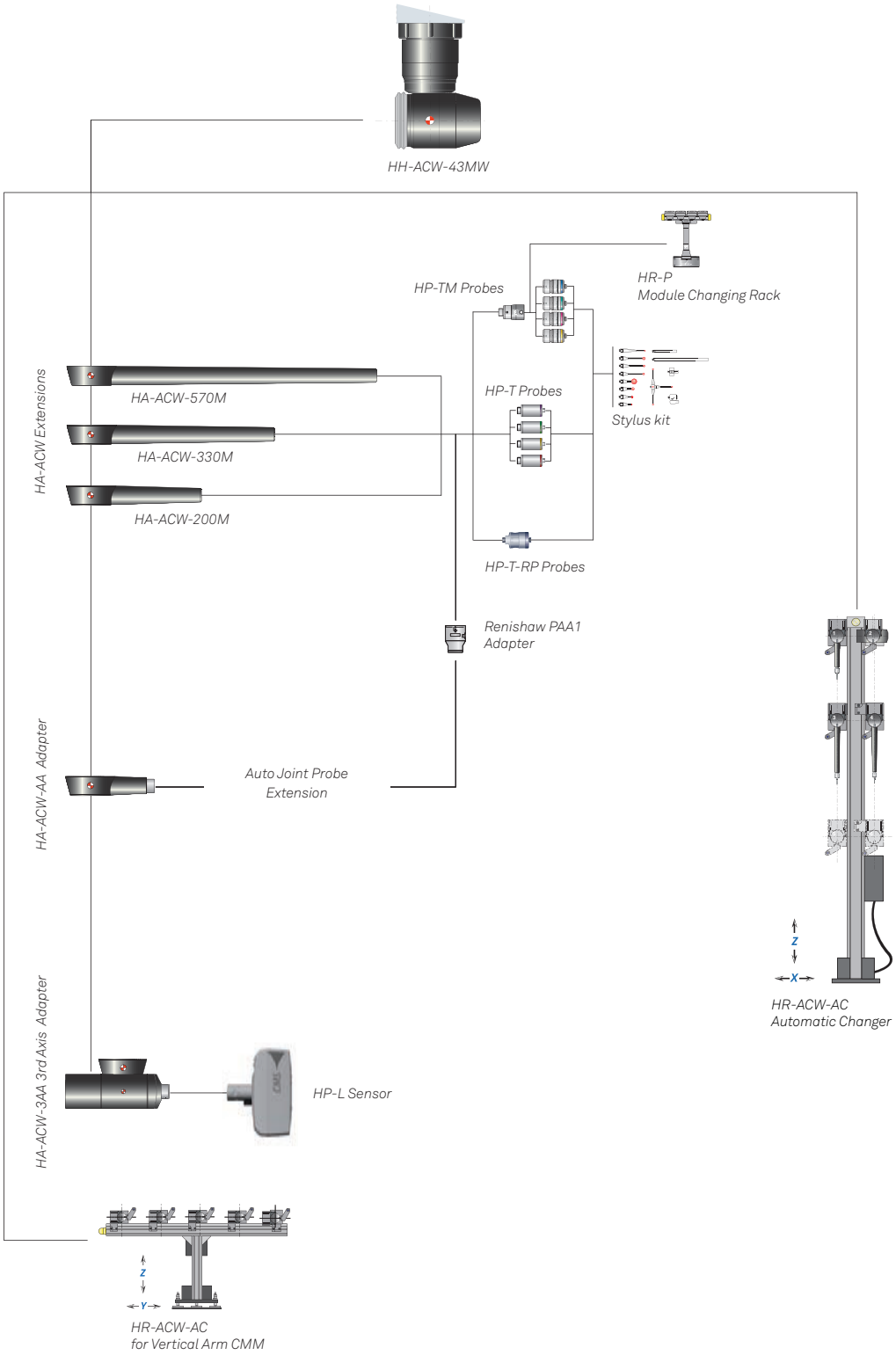
HP-S-X3C
SCANNING PROBE



HP-S-X5
SCANNING PROBE



HH-ACW-43MW
CONTINUOUS WRIST





MANUAL HEADS



AUTOMATIC HEADS



FIXED HEADS

Our vast array of sensor technologies provides a completely integrated system for measurement professionals. Built utilizing laser, tactile, optical and white light technologies, our sensors facilitate critical decision making. Trust our selection of precision sensors to meet your needs.

The position of the manual heads can be changed by hand. An automatic head can change it's position by itself. The fixed heads are mounted on the CMM's and cannot change positions.



HH-T PROBE HEAD

The HH-T is a manually adjustable probe head that can be rotated into an infinite number of non-repeatable positions. The built in compact touch trigger probe can be manually adjusted to allow for a wide range of probe combinations. The HH-T is the ideal tool for small and entry level machines.

Article	Part No.
HH-T (D5P - Ø 9,5 mm)	03939020

Technical Characteristics

Probe repeatiability 1d (2 sigma)*	0,75 µm
Adjustable trigger force	0.1 to 0.3 N
Overtravel	X/Y = +/- 20°, Z = + 6 mm
Measuring directions	±X, ±Y, +Z

* test conditions Stylus Length 21mm, Force setting 0.12N Touch Speed 8mm/s





HH-MI MANUAL PROBE HEAD

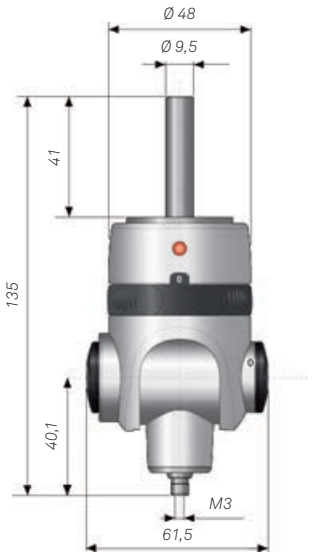
The HH-MI is a manually indexable probe head featuring an integrated high precision touch trigger probe. The probe head is capable of indexing in 15° increments and can achieve 168 unique positions without the need for requalification. The head can be easily locked, unlocked and rotated with one hand. The built in touch trigger probe can be manually adjusted to allow for a wide range of probe combinations

Article	Part No.
HH-MI (D5P - Ø 9,5 mm)	03939030

Technical Characteristics

Angular rotation	A: 0° – 90°; B: +/- 180°
Increments	15°
Total number of positions	168
Position repeatability	1,5 µm
Probe repeatiability 1D (2 Sigma)*	0,35 µm
Adjustable trigger force	0.1 to 0.3 N
Overtravel	X/Y = +/- 20°, Z = + 6 mm
Measuring directions	±X, ±Y, +Z
Axis clamping	Manual, by two buttons on the probe head

* test conditions Stylus Length 21mm, Force setting 0.12N Touch Speed 8mm/s





HH-MI-M MANUAL M8 PROBE HEAD

The HH-MI-M is a manually indexable probe head featuring a M8 threaded connection for the mounting of an external touch trigger probe. The probe head is capable of indexing in 15° increments and can achieve 168 unique positions without the need for requalification. The head can be easily locked, unlocked and rotated with one hand. The probe head can be combined with the HP-TM probe system and HR-P module changer to give the flexibility of an automatic stylus change without the need for requalification.

Article	Part No.
HH-MI-M (D5P - Ø 9,5 mm)	03939031

Technical Characteristics

Angular rotation	A: 0° – 90°; B: +/- 180°
Increments	15°
Total number of positions	168
Position repeatability	1,5 µm
Extensions	M8/M8, max. Length 50 mm
Adjustable trigger force	0.1 to 0.3 N
Axis clamping	Manual, by two buttons on the probe head



The products on this page can also be purchased with a variety of cables and shanks; they can also be purchased with styli kits. Please see the tables on pages 36 and 37 in this catalogue or consult your local Hexagon supplier.

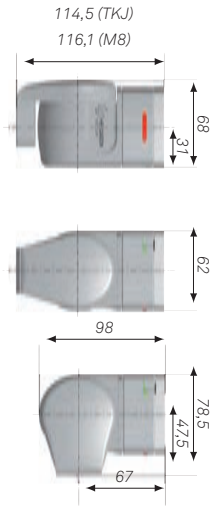


HH-A-T7.5 TKJ 7.5° AUTOMATIC PROBE HEAD

The HH-A-T7.5 is a motorised indexable probe head featuring high speed operation & high rotational torque. The head is fitted with a Kinematic Joint (TKJ) which can be connected to a Multiwire to give multi sensor support. The TKJ can be changed either manually or automatically (with the HR-R probe changer) without the need for requalification. The probe is capable of indexing in 7.5° increments and can achieve 720 unique positions.

HH-A-M7.5 M8 7.5° AUTOMATIC PROBE HEAD

The HH-A-M7.5 is a motorised indexable probe head featuring high speed operation & high rotational torque. The head is fitted with a M8 threaded connector and is compatible with all M8 accessories and probes in this catalogue. The probe head can be combined with the HP-TM probe system and HR-R module changer to give the flexibility of an automatic stylus change without the need for requalification. The probe is capable of indexing in 7.5° increments and can achieve 720 unique positions.





HH-AS8-T7.5 AUTOMATIC TKJ 7.5° PROBE HEAD

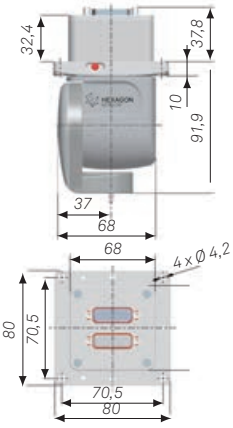
The HH-AS8-T7.5 is a ram mounted version of the HH-A-T7.5 detailed above.

The HH-AS8-T7.5 can be fitted directly to any Hexagon Metrology measuring machine that is fitted with an 80mm ram.

HH-AS8-M7.5 AUTOMATIC M8 7.5° PROBE HEAD

The HH-AS8-M7.5 is a ram mounted version of the HH-A-M7.5 detailed above.

The HH-AS8-M7.5 can be fitted directly to any Hexagon Metrology measuring machine that is fitted with an 80mm ram.



Article	Part No.
HH-A-T7.5	03939360
HH-A-M7.5	03939361
HH-AS8-T7.5 (TKJ / 80 mm ram)	03939362
HH-AS8-M7.5 (M8 thread / 80 mm ram)	03939363

The products on this page can also be purchased with a variety of cables and shanks; they can also be purchased with styli kits. Please see the tables on pages 36 and 37 in this catalogue or consult your local Hexagon supplier.

Technical Characteristics	HH-AS8-T7.5 TKJ 7.5°80mm	HH-AS8-M7.5 M8 7.5° 80mm	HH-A-T7.5 TKJ 7.5°	HH-A-M7.5 M8 7.5°
Indexing Angle	7.5°			
A axis	+105° to 0°			
B axis	+- 180°			
Total number of Positions	720			
Rotations speed	90° in 2 s			
Positioning Repeatability	0.5 µm at 100mm from the centre of A Axis rotation			
Max recommended drive torque	0.6 Nm			
Maximum Extension Length	300mm			
Weight	938 g		780 g	
Extension	Max. Length 300 mm			
Head mounting	Direct to Ram		Shank/Flange to suit CMM	
Probe mounting	TKJ (Multiwire)	M8 Thread (2 wires)	TKJ (Multiwire)	M8 Thread (2 wires)
Head controller	HH-C-V2.0 / HH-CA-V2.0 (with HR-R Automatic Probe Changer)			

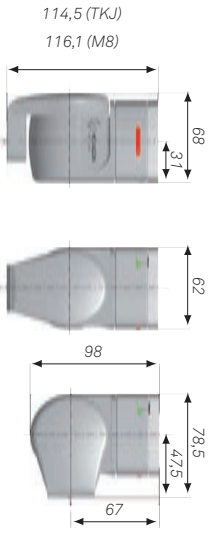


HH-A-T5 AUTOMATIC TKJ PROBE HEAD

The HH-A-T5 is a motorised indexable probe head featuring high speed operation & high rotational torque. The head is fitted with a Kinematic Joint (TKJ) which can be connected to a Multiwire to give multi sensor support. The TKJ can be changed either manually or automatically (with the HR-R probe changer) without the need for requalification. The probe is capable of indexing in 5° increments and can achieve 3024 unique positions.

HH-A-M5 AUTOMATIC M8 PROBE HEAD

The HH-A-M5 is a motorised indexable probe head featuring high speed operation & high rotational torque. The head is fitted with a M8 threaded connector and is compatible with all M8 accessories and probes in this catalogue. The probe head can be combined with the HP-TM probe system and HR-R module changer to give the flexibility of an automatic stylus change without the need for requalification. The probe is capable of indexing in 5° increments and can achieve 3024 unique positions.





HH-AS-T5 AUTOMATIC TKJ PROBE HEAD

The HH-AS-T5 is a ram mounted version of the HH-A-T5 detailed above.

The HH-AS-T5 can be fitted directly to any Hexagon Metrology measuring machine that is fitted with an 80mm ram or any Hexagon Metrology measuring machine fitted with a 65mm ram.

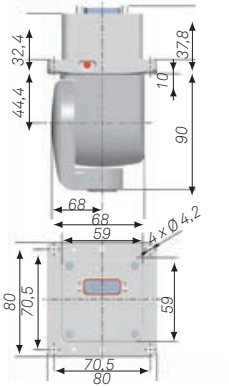
HH-AS-M5 AUTOMATIC M8 PROBE HEAD

The HH-AS-M5 is a ram mounted version of the HH-A-M5 detailed above.

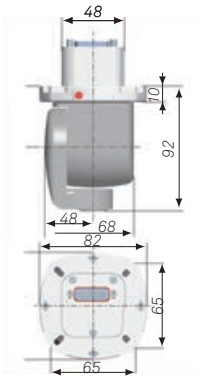
The HH-AS-T5 can be fitted directly to any Hexagon Metrology measuring machine that is fitted with an 80mm ram or any Hexagon Metrology measuring machine fitted with a 65mm ram.

Article	Part No.
HH-A-T5	03939450
HH-A-M5	03939400
HH-AS6-T5 (TKJ / 65 mm ram)	03939260
HH-AS8-T5 (TKJ / 80 mm ram)	03939270
HH-AS6-M5 (M8 thread / 65 mm ram)	03939280
HH-AS8-M5 (M8 thread / 80 mm ram)	03939290

HH-AS8-M5 M8 5° 80 mm ram
HH-AS8-T5 TKJ 5° 80 mm ram



HH-AS6-M5 M8 5° 65 mm ram
HH-AS6-T5 TKJ 5° 65 mm ram



The products on this page can also be purchased with a variety of cables and shanks; they can also be purchased with styli kits. Please see the tables on pages 36 and 37 in this catalogue or consult your local Hexagon supplier.

Technical Characteristics	HH-AS6-T5 TKJ 5°	HH-AS6-M5 M8 5°	HH-AS8-T5 TKJ 5°	HH-AS8-M5 M8 5°	HH-AS-T5 TKJ5°	HH-A-M5 M8 5°
Indexing Angle	5°					
A axis	+ 90° to - 115°					
B axis	+- 180°					
Total number of Positions	3024					
Rotations speed	90° in 2 s					
Positioning Repeatability	0.5 µm at 100mm from the centre of A Axis rotation					
Max recommended drive torque	0.6 Nm					
Maximum Extension Length	300mm					
Weight	874 g		938g		780 g	
Head mounting	Probe mounting		Direct to Ram 80 mm		Shank/Flange to suit CMM	
Probe mounting	TKJ (Multiwire)	M8 Thread (2 wires)	TKJ (Multiwire)	M8 Thread (2 wires)	TKJ (Multiwire)	M8 Thread (2 wires)
Head controller	HH-C-V2.0 / HH-CA-V2.0 (with HR-R Automatic Probe Changer)					



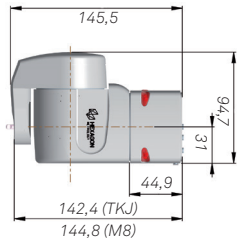
HH-A-T2.5 AUTOMATIC TKJ PROBE HEAD

The HH-A-T2.5 is a motorised probe head in the Hexagon Metrology Sensor line; the head features a number of new innovations including an *embedded controller, capacitive crash protection* and positioning is achieved by use of a *Hirth Gear*. The HH-A-T2.5 also benefits from a completely redesigned drive system; it features a large number of indexable positions and very high rotational torque. The head is fitted with a kinematic joint (TKJ) which can be connected to a Multiwire to give multi sensor support.

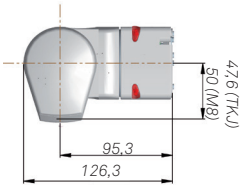
The TKJ can be changed either manually or automatically (with the HR- R probe changer) without the need for requalification. The probe is capable of indexing in 2.5° increments and can achieve 12,240 unique positions.

HH-A-M2.5 AUTOMATIC M8 PROBE HEAD

The HH-A-M2.5 has the same features as the HH-A-T2.5 detailed above. The head is fitted with a M8 threaded connector and is compatible with all M8 accessories and probes in this catalogue.









HH-AS8-T2.5 AUTOMATIC TKJ PROBE HEAD

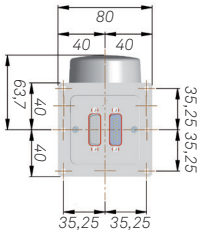
The HH-AS8-T2.5 is a ram mounted version of the HH-A-T2.5 detailed above.

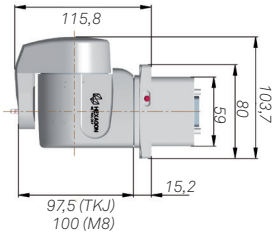
The HH-AS8-T2.5 can be fitted to any Hexagon Metrology measuring machine that is fitted with an 80mm ram.

HH-AS8-M2.5 AUTOMATIC M8 PROBE HEAD

The HH-AS8-M2.5 is a ram mounted version of the HH-A-M2.5 detailed above.

The HH-AS8-M2.5 can be fitted to any Hexagon Metrology measuring machine that is fitted with an 80mm ram. The head is equipped with a M8 threaded connector and is compatible with all M8 accessories and probes in this catalogue.





Article	Part No.
HH-A-T2.5 (TKJ)	03939420
HH-A-M2.5 (M8 thread)	03939421
HH-AS8-T2.5 (TKJ / 80 mm ram)	03939422
HH-AS8-M2.5 (M8 thread / 80 mm ram)	03939423

The products on this page can be purchased with a variety of cables and shanks. Please see the "Probe head cabling and shank configuration" section of this catalogue or consult your local Hexagon supplier

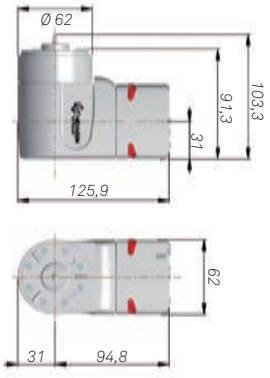
Technical Characteristics	HH-A-T2.5 *TKJ 2.5°*	HH-AS8-T2.5 *TKJ 2.5°*
Indexing Angle	2.5°	
A axis	± 105°	
B axis	± 180°	
Total number of Positions	12.240	
Rotations speed	90° in 2.5 s	
Positioning Repeatability	0.5 µm at 100mm from the center of A Axis rotation	
Max recommended drive torque	1.4 Nm	
Maximum Extension Length	450mm	
Weight	1600 g	1650 g
Head mounting	Shank/Flange to suit CMM	Direct to Ram 80mm
Probe mounting	TKJ (Multiwire)	
Head controller	HH-C-V2.0 / HH-CA-V2.0 (with HR-R Automatic Probe Changer)	



HH-A-H2.5 AUTOMATIC HDKJ PROBE HEAD

The HH-A-H2.5 is the latest motorised probe head in the Hexagon Metrology Sensor line; the head features a number of new innovations including an *embedded controller, capacitive crash protection* and positioning is achieved by use of a *Hirth Gear.* The HH-A-T2.5 also benefits from a completely redesigned drive system; it features a large number of indexable positions and extremely high rotational torque. The head is fitted with the all new *Heavy Duty Kinematic Joint* (HDKJ) which can carry extension of up to 750 mm and can also be connected to a Multiwire to give multi sensor support. Laser scanner and analogue scanning heads can be supported further from the axis of rotation than with conventional heads due to the combination of extreme rotational torque and the HDKJ adaptor.

The HDKJ can be changed either manually without the need for requalification or automatically with the HR-R tool changer fitted with the optional HR-RH Heavy Duty Module. The probe is capable of indexing in 2.5° increments and can achieve 20,736 unique positions.



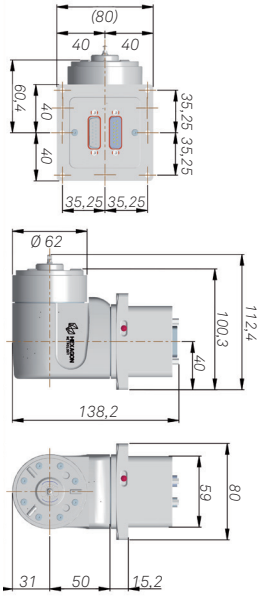


HH-AS8-H2.5 AUTOMATIC HDKJ PROBE HEAD

The HH-AS8-H2.5 is a ram mounted version of the HH-A-H2.5 detailed above.

The HH-AS8-H2.5 can be fitted to any Hexagon Metrology measuring machine that is fitted with an 80mm ram.

Article	Part No.
HH-A-H2.5	03939430
HH-AS8-H2.5 (80 mm ram)	03939431



The products on this page can be purchased with a variety of cables and shanks. Please see the "Probe head cabling and shank configuration" section of this catalogue or consult your local Hexagon supplier

Technical Characteristics	HH-A-H2.5 HDKJ 2.5°	HH-AS8-H2.5HDKJ 2.5°
Indexing Angle	2.5	
A axis	± 180°	
B axis	± 180°	
Total number of Positions	20.736	
Rotations Speed	90° in 2.5s	
Positioning Repeatability	0.5 µm at 100mm from the center of A Axis rotation	
Max recommended drive torque	1.7 Nm	
Maximum Extension Lenght	750 mm	
Weight	1550 g	1600 g
Head Mounting	Shank / Flange to suit CMM	Direct to Ram 80mm
Head controller	HH-C-V2.0 / HH-CA-V2.0 (with HR-R Automatic Probe Changer)	



HH-ACW-43MW CONTINUOUS WRIST

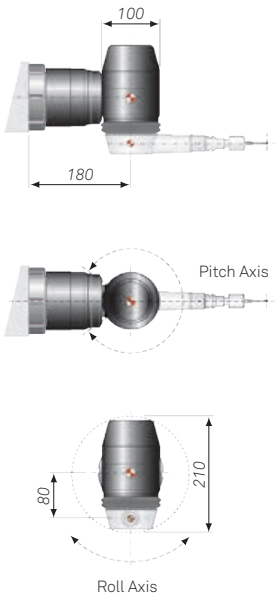
The HH-ACW-43MW multi-axis continuous wrist allows the fast and accurate orientation of probes in any probing direction in space. The continuous positioning of rotary axes (virtually unliwithed angular positions), along with the possibility to handle standard extensions with total length up to 600 mm from the centre of rotation allows full access to the part to be measured. The exclusive adapter changer allows the automatic change of extensions and adapters thus ensuring ideal flexibility. Through the HH-ACW-MW43 multi-wire adapter, the HH-ACW-43MW continuous wrist is compatible with the most popular probes and stylus/probe changers allowing point to point and scanning measurements.

For the continuous wrist, the HH-ACW-3AA 3rd axis adapter is available for the correct application of non-contact sensors.

Article	Part No.
HH-ACW-43MW	G30481300

Technical Characteristics

Description	Roll Axis	Pitch Axis
Useful angular stroke	± 180°	± 170°
Rotation speed	1 rad/s	
Acceleration	10 rad/s^2	
Resolution	0,14 arc^{II}	
Positioning repeatability	1 x 10-5 rad	
Weight	3,5 kg	
Max. tool weight	1,5 kg	
Max. applied torque	2 Nm	
Adapters	HA-ACW-AA HA-ACW-3AA	
Extensions	E200-mw, E330-mw, E570-mw HP-T-RP, HP-T, HP-TM	
Probes	Compatible with other sensors on the market	
Probe changers	HR-ACW-AC, HR-P	





HP-T PROBE

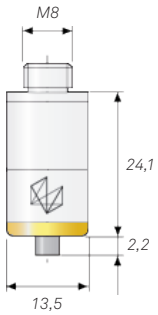
The HP-T probe is a compact 5 way touch trigger probe and is available in one of four variations; each variation provides a different trigger force. The probe is fitted with a M8 threaded connection.

Article	Part No.	Article	Part No.
HP-T-LF Low Force	03939070	**HP-T-SF** Standard Force	03939071
HP-T-MF Medium Force	03939072	**HP-T-EF** Extended Force	03939073

Technical Characteristics

Masuring directions	+/- X, +/- Y, +Z
Probe mounting	M8
Stylus mounting	M2
Over travel	X/Y: ± 16°, Z: 5mm
Max. styli length	See diagram page 18
Weight	9,5 g

	Pre Travel Variance	*Trigger force*	*Repeatability 1D (2 Sigma)**
HP-T-LF Low Force	± 0.6 µm	0,055 N at10 mm	0,35 µm
HP-T-SF Standard Force	± 0.8 µm	0,08 N at 10 mm	0,35 µm
HP-T-MF Medium Force	± 1.00 µm	0,10 N at 25 mm	0,5 µm
HP-T-EF Extended Force	± 2.00 µm	0,10 N at 50 mm	0,65 µm





HP-TM PROBE

The HP-TM probe is a compact 5 way touch trigger probe, the two piece design is comprised of the probe body and a detachable stylus module. The body and stylus are connected together by a highly repeatable kinematic magnetic coupling. The modules can be quickly changed either manually or automatically without the need to recalibrate the probe. The stylus modules are available in four versions each giving a different trigger force.
The HP-TM system can be easily retrofitted and is compatible with existing touch trigger controllers, extension and accessories.

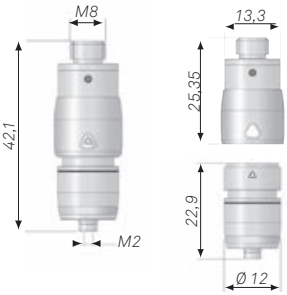
Article	Part No.	Article	Part No.
HP-TM-LF Low Force	03939170	**HP-TM-SF** Standard Force	03939171
HP-TM-MF Medium Force	03939172	**HP-TM-EF** Extended Force	03939173
HP-TM-TB Body	03939174		

Different kits are available with different probe configurations. (See diagram page 18)

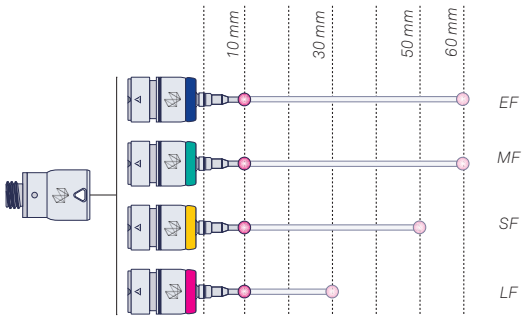
Technical Characteristics

Measuring direction	+/- X, +/- Y, +Z
Probe mounting	M8
Stylus mounting	M2
Over travel	X/Y: ± 16°, Z: 5mm
Maximum Styli lenght	See diagram page 18
Module weight	9,5g

	Pre Travel Variance	*Trigger force*	*Repeatability 1D (2 Sigma)*
HP-TM-LF Low Force	± 0.6 µm	0,055 N at10 mm	0,35 µm
HP-TM-SF Standard Force	± 0.8 µm	0,08 N at 10 mm	0,35 µm
HP-TM-MF Medium Force	± 1.00 µm	0,10 N at 25 mm	0,5 µm
HP-TM-EF Extended Force	± 2.00 µm	0,10 N at 50 mm	0,65 µm



Contents of HP-TM Kits	Kit 1	Kit 2	Kit 3	Kit 4	Kit 5	Kit 6	Kit 7	Kit 8	Kit 9	Kit 10	Kit 11
	03939175	03939210	03939211	03939212	03939213	03939214	03939215	03939216	03939217	03939218	03939219
HP-TM-LF	1 pc.							1 pc.			
HP-TM-SF	1 pc.	2 pc.	1 pc.	1 pc.					1 pc.		
HP-TM-MF	1 pc.		1 pc.		2 pc.	1 pc.				1 pc.	
HP-TM-EF	1 pc.			1 pc.		1 pc.	2 pc.	1 pc.			1 pc.
HP-TM-TB probe body	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.	1 pc.



Max. Stylus length HP-T and HP-TM



HP-T-RP PROBE

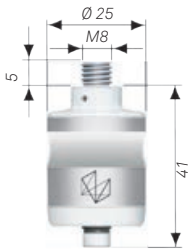
The HP-T-RP is a rugged and accurate touch trigger probe designed to be used in industrial environments. The probe has been designed to work with all Hexagon Metrology measuring machines from the bridge and sheet metal product lines. The rugged nature of the probe makes it ideally suited to work with both robots and portable products. The accuracy can be optimised by manually adjusting the trigger force for the required application.

Article	Part No.
HP-T-RP	03939350

Technical Characteristics

Measuring directions	±X, ±Y, +Z
Stylus force	0,11 N to 0,30 N
Repeatability 1D (2 Sigma)	0,35 µm
Probe mounting	M8
Stylus mounting	M3
Overtravel	X/Y: ± 22,0°, Z: 5,5 mm (with 0,11 N), 2,0 mm (with 0,30 N)
Probe extensions	L = 300 mm max. using the HH-A Probe Head
Stylus length	Up to 100 mm
Probe weight	43 g

*Test conditions Stylus Length 21mm, Force setting 0.12N Touch Speed 8mm/s





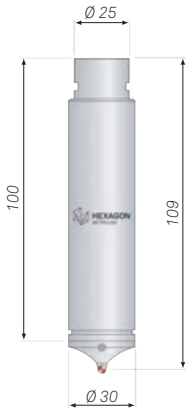
HP-S-X1S SCANNING PROBE

The HP-S-X1S is a high accuracy 3D scanning probe that can rapidly and automatically collect thousands of data points for the complete and precise evaluation of all part features, including form, location and size. This sensor uses the same technology as the other probe heads of the HP-S series (X3-X5). It supports both Single Point Probing and Continuous Scanning. Also available is the Self-Centering mode, which is particularly useful for measuring gears. Like the other Scanning probe heads, the HP-S-X1S provides simultaneous and unclamped probing in all axes, always orthogonal to the contact surface. The Kinematic Joint allows changing the probe head on the HR-R automatic probe changer. Stylus magnetic holders allow fast and repeatable stylus change using the HP-S-X1S automatic styli changer or the 3 port unit for HR-R.

Article	Part No.
HP-S-X1S	M00-114-006-000

Technical Characteristics

Probe head type	Analogue
Probe interface	TKJ (Kinematic Joint)
Dimensions	Ø 30 x 109 mm
Weight	100 g
Resolution	< 0,1 µm
Measuring range	± 2 mm in all axes
Linear stiffness	HP-S-X1S: 1,2 N/mm
Stylus joint	M3
Max. stylus weight	20 g (incl. stylus clamping)
Max. Stylus lenght range	Up to 115 mm





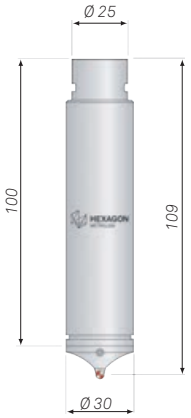
HP-S-X1H SCANNING PROBE

HP-S-X1H is a high accuracy 3D scanning probe head. Styli extensions up to 225 mm length in vertical orientation and 50 mm in horizontal orientation are possible. The HP-S-X1H supports all standard probing modes like Single Point Probing, Self-Centering as well as Continuous High-Speed-Scanning for fast and accurate form and profile measurements. Like the other Scanning probe heads, the HP-S-X1H provides simultaneous and unclamped probing in all axes, always orthogonal to the contact surface.

Article	Part No.
HP-S-X1H	M00-114-008-000

Technical Characteristics

Probe head type	Analogue
Probe interface	TKJ (Kinematic Joint)
Dimensions	Ø 30 x 109 mm
Weight	100 g
Resolution	< 0,1 µm
Measuring range	± 2 mm in all axes
Linear stiffness	1,2N/mm
Stylus joint	M3
Max. stylus weight	33 g (incl. stylus clamping)
Max. Stylus lenght range	Vertical: Up to 225 mm Horizontal: Up to 50 mm





HP-S-X1C FIXED SCANNING PROBE

The HP-S-X1C is part of the highly accurate HP-S series, that has been specifically designed to meet today's requirements for coordinate measuring machines. Probe extensions up to 225mm length in vertical orientation and 50 mm in horizontal orientation are possible. Its small outer diameter allows measurements deep inside a work piece. The HP-S-X1C supports all standard probing modes like Single Point Probing, Self-Centering as well as Continuous High-Speed-Scanning for fast and accurate form and profile measurements. Like the other Scanning probe heads, the HP-S-X1C provides simultaneous and unclamped probing in all axes, always orthogonal to the contact surface.

Article	Part No.
HP-S-X1C	M00-114-009-000

Technical Characteristics

Probe head type	Analogue
Direction	Center mounted
Probe interface	Dovetail connector
Dimensions	Ø 30 x 95 mm
Weight	100 g
Resolution	< 0,1 µm
Measuring range	± 2 mm in all axes
Linear stiffness	1,2N/mm
Stylus joint	M3
Max. stylus weight	33 g (incl. stylus clamping)
Max. stylus length range	Vertical: Up to 225 mm Horizontal: Up to 50 mm





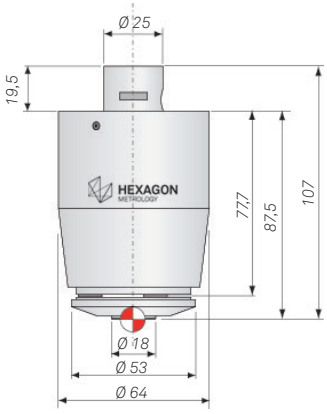
HP-S-X3T SCANNING PROBE

The HP-S-X3T is an extremely accurate 3D scanning probe head. It is capable of automatically collecting thousands of points for accurate evaluation of all geometric elements including form, position and dimension. It can be used along with the HH-A motorized indexable probe head, thus increasing the versatility of your measuring system. It is equipped with a stylus holder with magnetic adapter that permits a fast and repeatable styli change using the HR-S-X3 automatic styli changer.

Article	Part No.
HP-S-X3T	M00-114-004-000

Technical Characteristics

Probe head type	Analogue
Probe interface	TKJ (Kinematic Joint)
Dimensions	Ø 64 x 107 mm
Weight	270 g
Resolution	< 0,1 µm
Measuring range	± 1 mm in all axes
Overtravel range	± 1,25 mm in all axes
Linear stiffness	5 N/mm
Stylus joint	M5
Max. stylus weight	150 g (incl. stylus clamping)
Max. stylus length	150 mm





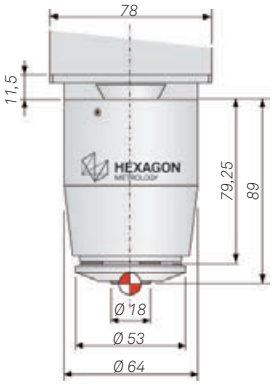
HP-S-X3C FIXED SCANNING PROBE

The HP-S-X3C fixed scanning probe head is compact, fast and accurate. It can carry up to 360 mm long probing extensions. The HP-S-X3C offers effective Single Point Probing in all standard metrology tasks as well as continuous High-Speed-Scanning for form and profile inspection of complex geometric elements (cylinder gears, worm gears, turbine blades, worm screws etc.). Probe trigger force is measured by high resolution linear variable differential transducers (LVDT) allowing the correct compensation for stylus deflection even when long extensions are fitted, and to automatically measure in a direction orthogonal to the part.

Article	Part No.
HP-S-X3C	M00-114-003-000

Technical Characteristics

Probe head type	Analogue
Direction	Center mounted
Probe interface	Dovetail connector
Dimensions	Ø 64 x 89 mm
Weight	270 g
Resolution	< 0,1 µm
Measuring range	± 1 mm in all axes
Overtravel range	± 1,25 mm in all axes
Linear stiffness	15 N/mm
Stylus joint	M5
Max. stylus weight	150 g (Incl. stylus clamping)
Max. stylus length	Up to 360 mm





HP-S-X5 FIXED SCANNING PROBE

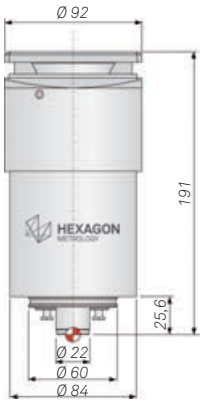
HP-S-X5 is a fixed probe head for analogue probing. This heavy-duty analog probe head features an effective anti-collision system. HP-S-X5 has a dovetail connection allowing fast and easy change of the probe head when performing maintenance work. It is capable of performing Single Point Probing and continuous High-Speed-Scanning for profile and shape error inspection of complex geometric parts (e.g. cylinder gears, worm gears, turbine blades, worm screws etc.). The probe trigger position is measured by high resolution linear variable differential transducers (LVDT) allowing the correct compensation for the stylus deflection even when long extensions are fitted, and to automatically measure in a direction orthogonal to the part for more accurate measuring results. As an option, a workpiece temperature sensor (WTS) can be swapped into the probe head automatically.

Article	Part No.
HP-S-X5 (Version 3)	M00-114-031-000
HP-S-X5 HD	M00-114-024-000

Technical Characteristics	HP-S-X5	HP-S-X5HD*
Probe head type	Analogue	
Position	Center mounted	
Probe interface	Dovetail connector	
Dimensions	Ø 84 x 191 mm	
Weight	1.080 g	
Resolution	< 0,1 µm	
Measuring range	± 1 mm in all axes	
Overtravel range	± 2 mm in all axes	
Linear stiffness	5 N/mm	
Stylus joint	M5	
Max. stylus weight	500 g (Incl. Stylus clamping)	650 g (Incl. Stylus clamping)
Max. stylus length	Up to 500 mm	Up to 800 mm
Collision protection	Standard	
Air supply	0,5 MPa	
Part temperature sensor	optional	optional
Profiler R (tactile roughness sensor)		optional



temperature sensor für HP-S-X5



* For the time being only available on CMMs Leitz PMM-Xi and Reference Xi in combination with Software Quindos



HP-L SENSOR

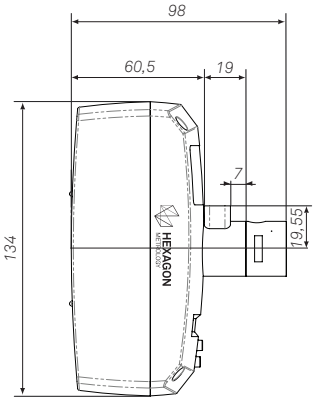
The HP-L-10.6T is a laser line scanning sensor with two unique features:
- three level zoom offering a 24, 60 or 124 mm laser line
- automatic, real-time laser power adjustment

The HP-L-10.6T is available on bridge and horizontal arm coordinate measuring machines. The probe offers rapid non-contact metrology for three key application areas: free form surface inspection, sheet metal feature inspection and reverse engineering.

Article	Part No.
HP-L-10.6T with controller (TKJ)	03939500
HP-L-10.6T (TKJ)	03939502
HP-L-10.6A (Autojoint)	03939503
Warming post for HR-R	03939507
Manual warm-up station (TKJ)	03939508
Set of 4 TKJ Angular Adapters	03969394

Technical Characteristics

Laser	Class 2
Standoff	170 +/- 30 mm
Line Width	24 / 60 / 124 mm
Point Spacing (min)	25 µm
Line Rate (max)	53 Hz
Accuracy Statement (MPE)	20 µm
Accuracy Specification	The sensor accuracy is defined by the Maximum Permissible Error (MPE) of the XY location of a calibration cylinder measured at any location through the XY range of the sensor.
Sensor Operating Temperature for declared Accuracy	15 - 32 °C
Sensor Operating Temperature	5 - 45 °C
Sensor Ambient Light Immunity	40 000 lux
Sensor IP Rating	64
Sensor Size L x W x H	134 x 72 x 60,5 mm
Sensor Weight	360 g (Autojoint) / 379 g (TKJ)
Controller Maximum Operating Temperature	50° C







HP-C-VE VISION SENSOR

HP-C-VE cameras are designed to be a general purpose image analysis tool for enhancing the measurement capabilities of a CMM. It provides oblique overhead illumination of the feature being inspected. HP-C-VE cameras are very versatile and have many potential applications for the CMM user. Due to their general-purpose nature HP-C-VE cameras are provided with a fixed magnification and are intended for taking data points in a static condition. The HP-C-VE contains a customisable illumination system, which makes it a self contained measuring system, suitable for a wide range of applications.
The HP-C-VE is compatible with the automatic probe changer HR-R. This system allows the CMM to change the sensor being used, enabling the HP-C-VE to be integrated within multiple sensor part programs, and allows sensor exchanging without the need for any operator intervention.

Article	Part No.
HP-C-VE complete set	CMMV-et

Technical Characteristics

Field of View (FOV)	Approx. 6 mm x 5 mm (on the workpiece being inspected) Area: > 35 mm²
Optical Magnification	The image at the CCD is 75% of the FOV (on the workpiece)
Object to Camera stand -off	75 mm
LED-illuminator	
Illumination	Oblique and targeted at the Optical Plane Centre
Type	High Intensity (Green for optimum reflection)
Number of LED	12 arranged in two rings
Inner LED Ring	4 radially spaced at 90° at 0° inclination
Outer LED Ring	8 radially spaced at 45° and at 16° inclination (the spacing of these 8 is also staggered radially 22.5° to the 4 LED pattern)
Selective Illumination	Rings are split into four segments Intensity of both rings can be adjusted independently





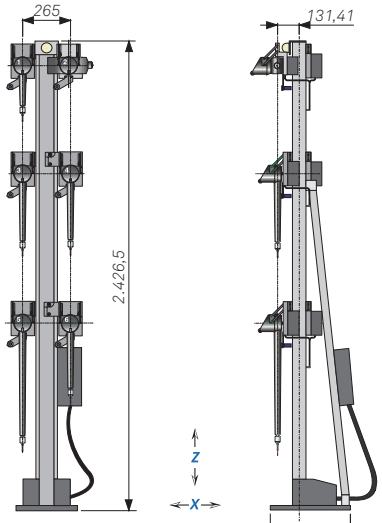
HR-ACW-AC AUTOMATIC CHANGER RACK

The HR-ACW-AC Automatic Changer Rack in combination with the HH-ACW-43MW allows the automatic repeatable change of all adapters/extensions during execution of the measuring program. The modular concept of the changing station allows the configuration of a variable number of stations.

Article	Part No.
Tool changer for horizontal arm CMM:	
Stand of HR-ACW-AC	G32631100
Station for HH-ACW-43MW Adapter & Extensions	G32631200
Station for HH-ACW-3AA Adapter with warmup-function	G32632000
Tool changer for vertical arm CMM:	
Stand of HR-ACW-AC	G32632900
Station for HR-ACW-43MW Adapter & Extensions	G32633000

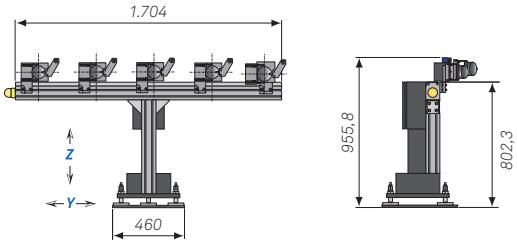
Technical Characteristics

No. of positions		Max. 8 for HR-ACW-AC for Horizontal arm-CMM Max. 5 for HR-ACW-AC for Vertical arm-CMM
Station type	A)	For HA-ACW-MWA Adapter and extensions (3.5 kg)
	B)	For HA-ACW-3AA Adapter (5.1 kg)
	C)	For HA-ACW-3AA Adapter with warm-up function (5.3 kg)
Weight		HR-ACW-AC Structure, horizontal arm CMM: 80 kg HR-ACW-AC-Structure, Vertical arm-CMM: 94 kg
Air supply		> 0,45 MPa < 1,0 MPa (rated working pressure)



HR-ACW-AC for Horizontal Arm-CMM





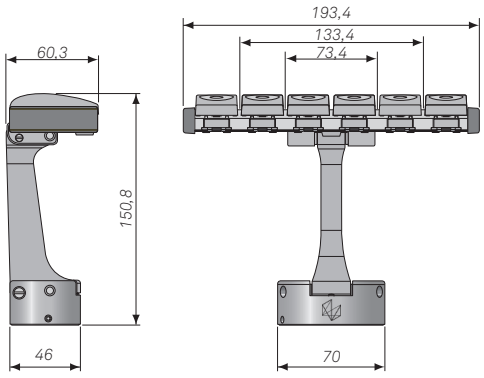
HR-ACW-AC for Vertical Arm-CMM



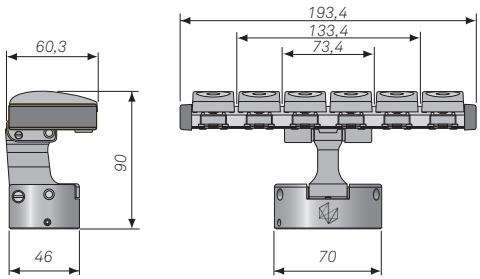
HR-P MODULE CHANGER RACK

The HR-P is a passive probe module changer; modules are exchanged by the CMM under the control of the measuring software. The HR-P rack is also designed to store probe modules safely and securely, providing them with protection from airborne contamination. The rack is available with 2, 4 or 6 ports and in 2 different heights 90mm and 150mm. There is also an optional module that can be combined with the HR-R tool changer to enable the changing of modules without the need of an extra changing rack on the system.

Article	Part No. (150 mm)	Part No. (90 mm)
HR-P2 (2 ports)	03939180	03939185
HR-P4 (4 ports)	03939181	03939186
HR-P6 (6 ports)	03939182	03939187
HR-PA-2 Additional 2 ports	03939190	03939190



HR-P with 2, 4 and 6 ports



HR-P with 2, 4 and 6 ports (lower version)



HR-R AUTOMATIC PROBE CHANGER RACK

The HR-R is an automatic tool changer that uses Hexagon Metrology's unique TKJ connector to exchange probes and extensions to and from the HH-A-T series of probe heads. The probe exchange is performed both quickly and accurately with no need for requalification. The HR-R is modular and can be easily customised to suit any application.

Article	Part No.
HR-R3 (3 Ports and Adjustable feet)	03939110
HR-R5 (5 Ports and Adjustable feet)	03939111
HR-R9 (9 Ports and Adjustable feet)	03939112
Rising block (100 mm)	03969370
Adjustable feet	052901
HR-RP-2 2 add. ports	03939192
HR-RA-40 Additional active port 40 mm	03939091
HR-RA-65 Additional active port 65 mm (for HP-C-VE, HP-L, HP-S-X3T)	03939092
HR-RH Modul (for HA-HT and HA-HM Adapter)	03939093



Additional active port 65mm

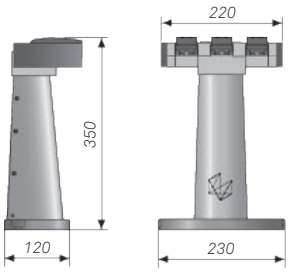


Additional active port 40mm

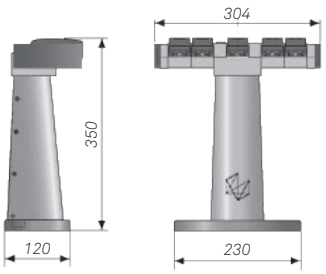


HR-RH Modul for HA-HT and HA-HM Adaptor

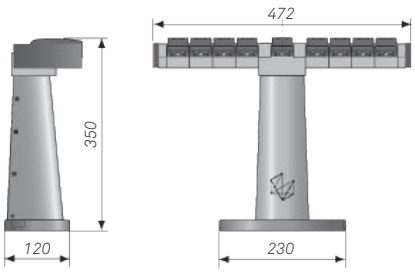
Fixing screws M8



HR-R3 with 3 ports



HR-R5 with 5 ports



HR-R9 with 9 ports

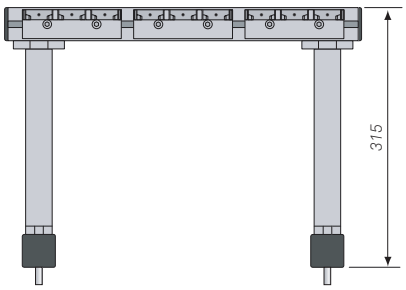


M00-114-111-000

HR-X1S AUTOMATIC STYLI CHANGER RACK

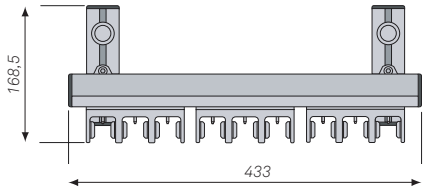
The changer rack is available from min. 6 ports (standard) to max. 9 ports. It allows the use of different styli configurations within a single part program without the need to repeat the calibration procedure. The magnetic docking of the probe holder allows fast and repeatable changes.

Article	Part No.
HR-X1S Automatic Styli Changer	
Standard 6 ports	M00-114-118-000
Additional 3 port styli change unit	M00-114-111-000



The Automatic Styli Changer Rack HR-R can be enhanced with 3 ports which can be used for the exchange of both: The HP-S-X1 probe head and stylus.

Article	Part No.
3 ports for HR-R	M00-114-134-000





M00-114-112-000



M00-114-119-000



M00-114-167-000

HR-X1C AUTOMATIC STYLI CHANGER RACK
HR-X1H AUTOMATIC STYLI CHANGER RACK

The changer rack is available from min. 3 ports (standard) to max. 9 ports. It allows the use of different styli configurations within a single part program without the need to repeat the qualification procedure. The magnetic docking of the stylus clamping allows fast and repeatable changes.

Article	Part No.
HR-X1C Automatic Styli Changer, Rack Standard 3 ports	M00-114-119-000
1 Stylus Changer Port	M00-114-112-000
HR-X1H Automatic Styli Changer Rack, Standard 3 ports	M00-114-119-000
1 Stylus Changer Port	M00-114-112-000
HR-X1C | H Automatic Styli Changer Rack, (without ports), extended L = 700 mm	M00-114-170-000
HR-X1-P-SF Shopfloor Stylus Changer Port	M00-114-167-000



Ⓐ M00-114-115-000

HR-X3 AUTOMATIC STYLI CHANGER RACK

The autochange rack allows to use different styli configurations during the measuring program execution without the need ro repeat the qualification procedure. The magnetic docking of the styli clamping allows fast and repeatable changes.

Technical Characteristics

Model	H (mm)	L (mm)	P (mm)	A (mm)	No. of Ports
Ⓐ HR-X3 automatic styli changer rack	340	708	94	300	from 3 to 7*
Ⓑ HR-X3 automatic styli changer rack	340	548	214	350	3
Ⓒ HR-X3 automatic styli changer rack	280	408	114	300	3
Ⓒ HR-X3 automatic styli changer rack	340	1200	94	700	3

* depending on styli configuration

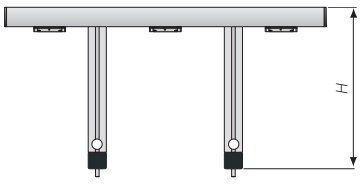


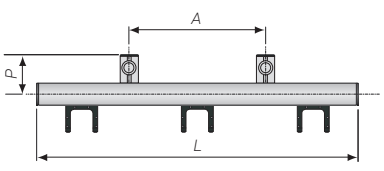
Ⓑ M00-114-116-000



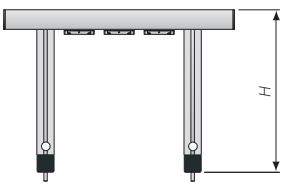
Ⓒ M00-114-117-000 (L=408mm)
M00-114-166-000 (L=1200mm)

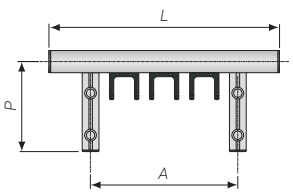
Ⓐ Ⓑ





Ⓒ







M00-114-110-000



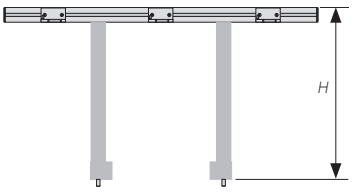
HR-X5 AUTOMATIC STYLI CHANGER RACK

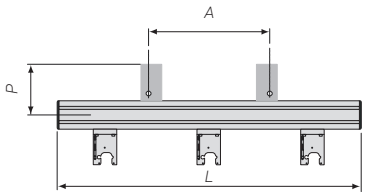
The autochange rack is available from minimum 3 ports (standard version) to maximum 12 ports (depending on the probe volume) and allows the use of different probe configurations during measuring program execution without need for recalibration. The pneumatic clamping of HR-XS allows fast and repeatable changes.

Technical Characteristics

Model	H (mm)	L* (mm)	P (mm)	A (mm)	No. of ports	No. of stylus clampings	Part No.
HR-X5 aut. styli changer rack DEA GLOBAL (various sizes)	467	878	142,5	300 & 350	3	3	M00-190-208-000
HR-X5 aut. styli changer rack Leitz Reference 15.9.7	419,7 (with extensions +48)	878	40 (unter Schiene)	350	3	2	M00-190-203-000
HR-X5 styli changer rack additional rack, Leitz Reference 15.9.7	182,7	878	187,5	350			M00-190-204-000
HR-X5 styli changer rack Leitz Reference 22.12.9	419,7 (with extensions +48)	1178	40 (unter Schiene)	1050	3	2	M00-202-203-000
HR-X5 styli changer rack, additional rack Leitz Reference 22.12.9	182,7	1178	142,5	1050			M00-202-204-000

** incl. cover caps (2x4mm)*







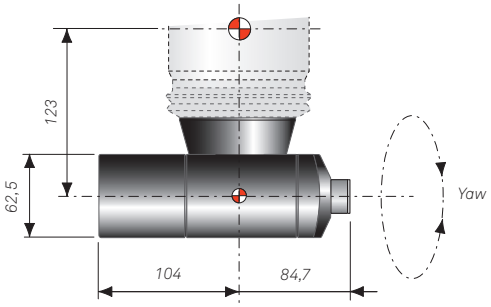
HA-ACW-3AA 3RD AXIS ADAPTER

The HA-ACW-3AA 3rd axis adapter allows the correct application of Non-Contact Sensors in combination with the HH-ACW-43MW. The repeatable docking allows the adapter to change both manually, or in automatic mode by using the HR-ACW-AC probe changer.

Article	Part No.
HA-ACW-3AA 3rd Axis Adapter	G30414900

Technical Characteristics

Useful angular stroke	± 180°
Useful angular stroke	1 rad/s
Useful angular stroke	10 rad/s
Resolution	3.16 arc
Positioning repeatability	7 x 10 rad
Weight	1,7 kg
Max. tool weight	1 kg
Max. applied torque	1,5 Nm
Sensor	HP-L-10.6
Changer	HR-ACW-AC

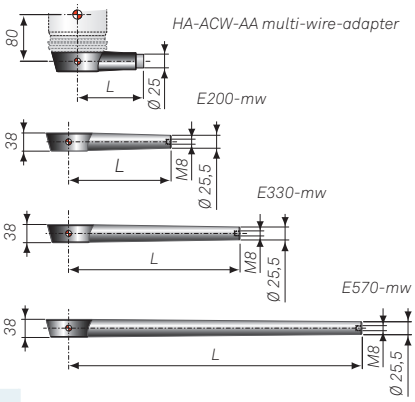




HA-ACW-AA ADAPTER
HA-ACW200M/330M/570M EXTENSIONS

ADAPTER - The HA-ACW-AA adapter allows the use of all probes/extensions equipped with autojoint. The repeatable docking allows the adapter change in automatic mode by using the HA-ACW-AC probe changer, and in manual mode.
EXTENSIONS – The series of extensions available in three different lengths can be used with all point to point probes equipped with an M8 thread. The repeatable docking system allows the change of extensions both in automatic and manual mode.

Article	Part No.
HA-ACW-AA Adapter	G32026300
Extension Kit	G32026200
HA-ACW-200M	G32025800
HA-ACW-330M	G32025900
HA-ACW-570M	G32026000



Technical Characteristics

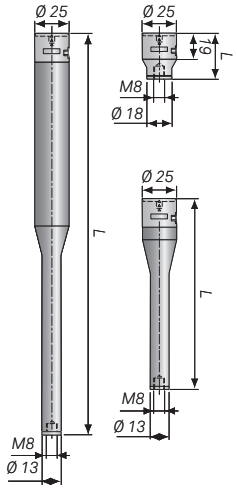
Description	Material	L (mm)	Weight (g)
Adapter			
HA-ACW-AA	Aluminium alloy and carbon fibre	129,5	500
Extensions			
HA-ACW-200M	Aluminium alloy and carbon fibre	200	550
HA-ACW-330M	Aluminium alloy and carbon fibre	320	600
HA-ACW-570M	Aluminium alloy and carbon fibre	570	650



HA-TM M8 ADAPTERS

The M8 adapters, available in three different lengths, are suitable for all touch-trigger probes with M8 threads. The TKJ allows fast and repeatable probes mounting and dismounting in automatic mode in combination with the HR-R automatic probe changer. Changing the probes manually is also possible.

Article		Part No.
HA-TM-31	31 mm adapter	03969365
HA-TM-140	140 mm adapter	03969366
HA-TM-300	300 mm adapter	03969367



Technical Characteristics

Description	Material	L (mm)	Weight (g)
HA-TM-31 adapter	Aluminium & stainless steel	33	64
HA-TM-140 adapter	Aluminium & stainless steel	142	84
HA-TM-300 adapter	Aluminium & stainless steel	302	121



HA-F FIXED ADAPTER

The HA-F fixed adaptor allows any "Auto-Joint" Multiwire probe to be used with the HH-A-T and HH-AS-T probe head series. The HA-F is fully compatible with the HR-R automatic tool changer.

Part No.

HA-F Fixed Adapter 03969369



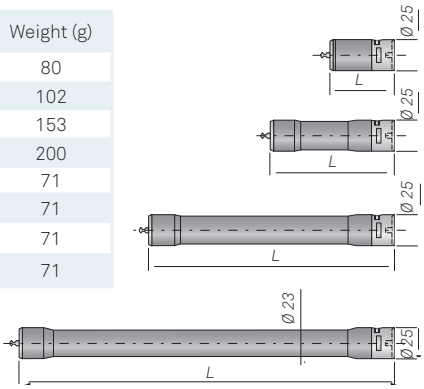
HA-TT TKJ EXTENSIONS

The HA-TT series is a range of TKJ to TKJ adapters; each adapter contains a full Multiwire and is fully compatible with the HR-R automatic tool changer. The extensions allow for the use of long stable probe builds for deep measuring applications. The range also contains 4 angular adaptors to allow the probing product to be mounted at a variety of angles.

Article		Part. No.
HA-TT-50 Extension	50 mm	03969360
HA-TT-100 Extension	100 mm	03969361
HA-TT-200 Extension	200 mm	03969362
HA-TT-300 Extension	300 mm	03969363
HA-TT-A0 Angular Adapter	0°	03969390
HA-TT-A30 Angular Adapter	30°	03969391
HA-TT-A60 Angular Adapter	60°	03969392
HA-TT-A90 Angular Adapter	90°	03969393
Set of 4 TKJ Angular Adapters		03969394

Technical Characteristics

Description	Material	L (mm)	Weight (g)
HA-TT-50 Extension	Aluminium & stainless steel	52	80
HA-TT-100 Extension	Aluminium & stainless steel	102	102
HA-TT-200 Extension	Aluminium & stainless steel	202	153
HA-TT-300 Extension	Aluminium & stainless steel	302	200
HA-TT-A0 Angular Adapter 0°	Aluminium & stainless steel	35	71
HA-TT-A30 Angular Adapter 30°	Aluminium & stainless steel	35	71
HA-TT-A60 Angular Adapter 60°	Aluminium & stainless steel	35	71
HA-TT-A90 Angular Adapter 90°	Aluminium & stainless steel	35	71

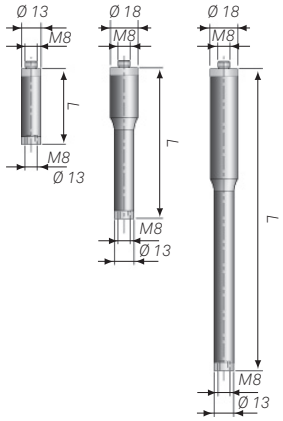




HA-M M8/M8 EXTENSIONS

The HA-M series is a range of M8 to M8 threaded connectors; the HA-M enables deep part access. The extension can be mounted on HH-MI-M, HH-A-M or the HA-TM series of probe head or accessories. The extension are available in three sizes: 50, 100 and 200mm.

Article		Part No.
HA-M-50	M8/M8 50 mm	03969065
HA-M-100	M8/M8 100 mm	03969066
HA-M-200	M8/M8 200 mm	03969067



Technical Characteristics

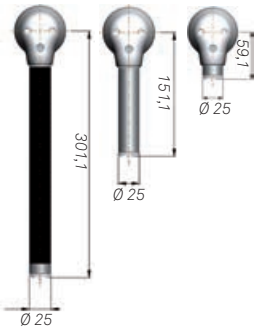
Description	Material	L (mm)	Weight (g)
HA-M M8/M8 full kit:			
HA-M-50 M8/M8 50 mm extension	Aluminium	50	23
HA-M-100 M8/M8 100 mm extension	Aluminium	100	55
HA-M-200 M8/M8 200 mm extension	Aluminium	200	85



HA-HT HDKJ TO TKJ ADAPTORS

The HA-HT series is a range of HDKJ to TKJ adaptors; each adaptor contains a full Multiwire and is fully compatible with the HR-R probe changer equipped with a HR-RH module. The adaptor allows the use of long stable probe builds for deep measuring applications.

Article		Part No.
HA-HT-CA	Compact aluminium adapter	03969345
HA-HT-150A	150mm aluminium adapter	03969346
HA-HT-300C	300mm carbon adapter	03969347

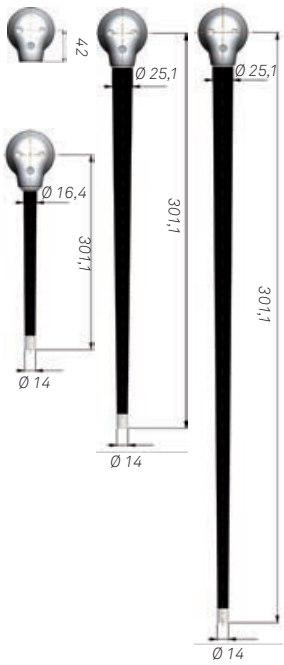




HA-HM HDKJ TO M8 ADAPTORS

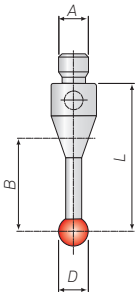
The HA-HM series is a range of HDKJ to TKJ adaptors, each adapter is compatible with any touch trigger probe fitted with a M8 connector. The adapter is fully compatible with the HR-R probe changer equipped with a HR-RH module. The adapter allow the use of extremely long and stable probe builds for very deep measuring applications.

Article		Part No.
HA-HM-CA	Compact adaptor	03969395
HA-HM-250C	250mm carbon adapter	03969396
HA-HM-500C	500mm carbon adapter	03969397
HA-HM-750C	750mm carbon adapter	03969398



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Technical Characteristics

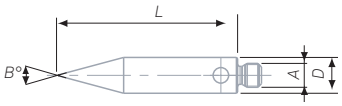
Description	Material	Dimensions (mm)				Weight (g)	Part No.
		A	D	L	B		
M2 Thread, Length 10 mm							
Stylus with Ruby ball tip, Ø 0,3 mm	TC	M2	0,3	10	2	0,3	03969268
Stylus with Ruby ball tip, Ø 0,5 mm	TC	M2	0,5	10	3	0,3	03969220
Stylus with Ruby ball tip, Ø 0,7 mm	TC	M2	0,7	10	4	0,3	03969267
Stylus with Ruby ball tip, Ø 1 mm	Steel	M2	1	10	4,5	0,3	03969201
Stylus with Ruby ball tip, Ø 2 mm	Steel	M2	2	10	6	0,3	03969202
Stylus with Ruby ball tip, Ø 2,5 mm	Steel	M2	2,5	10	6	0,3	03969225
Stylus with Ruby ball tip, Ø 3 mm	Steel	M2	3	10	7,5	0,4	03969203
Stylus with Ruby ball tip, Ø 4 mm	Steel	M2	4	10	10	0,5	03969204
Stylus with Ruby ball tip, Ø 5 mm	Steel	M2	5	10	10	0,7	03969205
Stylus with Ruby ball tip, Ø 6 mm	Steel	M2	6	10	10	1	03969206
Stylus with Ruby ball tip, Ø 8 mm	Steel	M2	8	11	11	1,5	03969208
M2 Thread, Length 20 mm							
Stylus with Ruby ball tip, Ø 0,5 mm	TC	M2	0,5	20	7	0,48	03969269
Stylus with Ruby ball tip, Ø 1 mm	TC	M2	1	20	12,5	0,41	03969271
Stylus with Ruby ball tip, Ø 1 mm	TC	M2	1	20	7	0,6	03969221
Stylus with Ruby ball tip, Ø 1,5 mm	TC	M2	1,5	20	12,5	0,5	03969272
Stylus with Ruby ball tip, Ø 2 mm	TC	M2	2	20	15	0,45	03969222
Stylus with Ruby ball tip, Ø 2 mm	Steel	M2	2	20	14	0,5	03969212
Stylus with Ruby ball tip, Ø 2,5 mm	Steel	M2	2,5	20	14	0,4	03969226
Stylus with Ruby ball tip, Ø 3 mm	Steel	M2	2	20	17,5	0,5	03969213
M2 Thread, Length 30 mm							
Stylus with Ruby ball tip, Ø 1 mm	TC	M2	1	27	20,5	0,4	03969259
Stylus with Ruby ball tip, Ø 1,5 mm	TC	M2	1,5	30	25	0,58	03969261
Stylus with Ruby ball tip, Ø 2 mm	TC	M2	2	30	25	0,99	03969262
Stylus with Ruby ball tip, Ø 3 mm	TC	M2	3	30	25	1,49	03969263
Stylus with Ruby ball tip, Ø 6 mm	Carbon	M2	6	30	30	0,96	03969286
M2 Thread, Length 40 mm							
Stylus with Ruby ball tip, Ø 2 mm	TC	M2	2	40	35	1,29	03969282
Stylus with Ruby ball tip, Ø 3 mm	TC	M2	3	40	35	1,97	03969283
Stylus with Ruby ball tip, Ø 4 mm	TC	M2	4	40	35	2,04	03969284
M2 Thread, Length 50 mm							
Stylus with Ruby ball tip, Ø 3 mm	Ceramic	M2	3	50	42,5	0,83	03969223
Stylus with Ruby ball tip, Ø 3 mm	TC	M2	3	50	42,5	2,44	03969293
Stylus with Ruby ball tip, Ø 4 mm	Ceramic	M2	4	50	42,5	0,91	03969224
Stylus with Ruby ball tip, Ø 4 mm	Carbon	M2	4	50	50	1	03969260
Stylus with Ruby ball tip, Ø 4 mm	TC	M2	4	50	42,5	2,52	03969294
Stylus with Ruby ball tip, Ø 5 mm	TC	M2	5	50	42,5	3,75	03969295
Stylus with Ruby ball tip, Ø 6 mm	Carbon	M2	6	50	50	1,2	03969276
M3 Thread, Length 21 mm							
Stylus with Ruby ball tip, Ø 0,5 mm	TC	M3	0,5	21	3	1,1	03969310
Stylus with Ruby ball tip, Ø 1 mm	Steel	M3	1	21	4	1,1	03969301
Stylus with Ruby ball tip, Ø 2 mm	TC	M3	2	21	15	0,8	03969312
Stylus with Ruby ball tip, Ø 2 mm	Steel	M3	2	21	8	1,1	03969302
Stylus with Ruby ball tip, Ø 2,5 mm	TC	M3	2,5	21	12,5	1,3	03969332
Stylus with Ruby ball tip, Ø 3 mm	Steel	M3	3	21	12	1,1	03969303
Stylus with Ruby ball tip, Ø 4 mm	Steel	M3	4	21	17	1,4	03969304
Stylus with Ruby ball tip, Ø 5 mm	Steel	M3	5	21	21	1,55	03969305

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Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M3 Thread, Length 30 mm							
Stylus with Ruby ball tip, Ø 2,5 mm	TC	M3	2,5	30	22,5	1,81	03969342
Stylus with Ruby ball tip, Ø 3 mm	Steel	M3	3	31	22	1,4	03969333
Stylus with Ruby ball tip, Ø 3 mm	TC	M3	3	30	22,5	1,4	03969323
Stylus with Ruby ball tip, Ø 3 mm	TC	M3	3	30	22,5	1,83	03969313
Stylus with Ruby ball tip, Ø 4 mm	Steel	M3	4	31	27	2	03969334
Stylus with Ruby ball tip, Ø 5 mm	Steel	M3	5	31	31	2,5	03969335
Stylus with Ruby ball tip, Ø 2 mm	TC	M3	2	30	22,5	1,3	03969322
M3 Thread, Length 40 mm							
Stylus with Ruby ball tip, Ø 3 mm	TC	M3	3	40	32,5	2,3	03969343
M3 Thread, Length 50 mm							
Stylus with Ruby ball tip, Ø 3 mm	TC	M3	3	50	42,5	2,78	03969353
M4 Thread, Length 20 mm							
Stylus with Ruby ball tip, Ø 2 mm	Steel	M4	2	19	8	2,3	03969402
M4 Thread, Length 50 mm							
Stylus with Ruby ball tip, Ø 8 mm	Ceramic	M4	8	50	-	5,4	03969408
M4 Thread, Length 100 m							
Stylus with Ruby ball tip, Ø 8 mm	Ceramic	M4	8	100	-	7	03969418

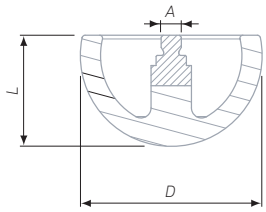
Point Styli



Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 Point Styli							
M2 point styli	Steel	M2	3	15	30	0,7	03969200
M2 point styli	TC	M2	1,4	10	30	0,7	03969141

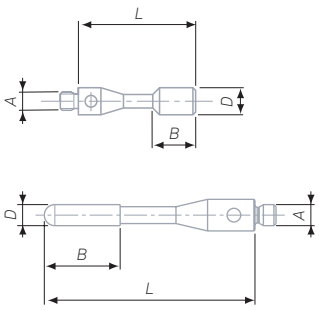
Hollow Ball Styli



Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
Hollow Ball Styli							
M2 hollow ball stylus	Ceramic	M2	18	11	-	3,3	03969218
M3 hollow ball stylus	Ceramic	M3	30	17	-	13	03969330

Cylinder Styli



Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 Cylinder Styli							
M2 Silver Steel Cylinder Stylus	Steel	M2	3	13	4	0,5	03969253
M2 Silver Steel Cylinder Stylus	Steel	M2	1,5	11	1,5	0,3	03969251
M2 Silver Steel Cylinder Stylus	Steel	M2	3	13	3,8	0,6	03969252
M2 Ruby Cylinder stylus	TC	M2	2	20	7,2	0,5	03969292

Parallel styli

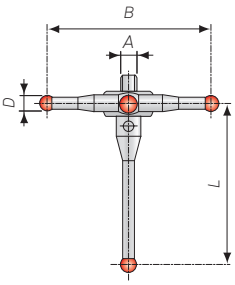
Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 parallel styli							
M2 parallel stylus	TC	M2	0,5	15,3	7,8	0,3	03969277
M2 parallel stylus	TC	M2	1	35,5	29,8	0,7	03969278
M2 parallel stylus	TC	M2	2	16	8,5	0,8	03969279
M2 parallel stylus	TC	M2	2	40	32	2	03969280
M2 parallel stylus	TC	M2	3	22,5	-	2	03969281

Star Styli and Crosspieces

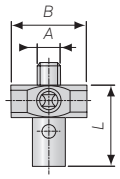
Technical Characteristics





Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 star styli							
M2 Star stylus, 5 directions	Steel	M2	2	18	20	1,3	03969081
M2 Star stylus, 5 directions	Steel	M2	2	20	20	1,3	03969055
M2 Star stylus, 5 directions	Steel	M2	2	18	30	1,7	03969082
M2 Star stylus, 5 directions	Steel	M2	2	20	30	1,7	03969056
M2 Star stylus, 4 directions	Steel	M2	0,5	20	20	0,7	03969210





M3 star styli							
M3 Star stylus, 5 directions	Steel	M3	2	18	20	2,2	03969083
M3 Star stylus, 5 directions	Steel	M3	2	20	20	2,2	03969057
M3 Star stylus, 5 directions	Steel	M3	2	18	30	2,5	03969084
M3 Star stylus, 5 directions	Steel	M3	2	20	30	2,5	03969058
Crosspieces							
5 directions – M2	Steel	M2	–	7,5	7	1	03969054
5 directions – M3	Steel	M3	–	13	10	3,7	03969046

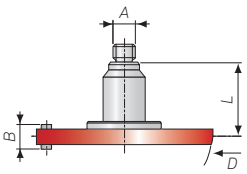
Disc styli

Technical Characteristics

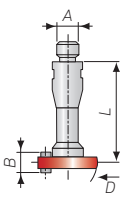




Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 disc styli							
Ø 6 mm, Length 10 mm	Steel	M2	6	10	2	0,6	03969241
Ø 18 mm, Length 7,5 mm	Steel	M2	18	7,55	2,5	3,1	03969242
Ø 18 mm, Length 3,7 mm	Steel	M2	18	3,7	3	2,7	03969243



spherical



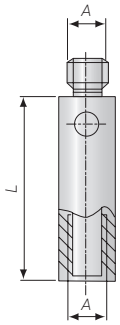
spherical

Styli Extensions



Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
M2 Extensions							
M2 Extension, L = 10 mm	Steel	M2	–	10	–	0,5	03969231
M2 Extension, L = 20 mm	Steel	M2	–	20	–	1,0	03969232
M2 Extension, L = 30 mm	Steel	M2	–	30	–	1,6	03969233
M2 Extension, L = 5 mm	Steel	M2	–	5	–	–	03969230
M2 Extension, L = 40 mm	Steel	M2	–	40	–	1,8	03969234
M2 Extension, L = 50 mm	Ceramic	M2	–	50	–	1,51	03969247
M2 Extension, L = 40 mm	Ceramic	M2	–	40	–	1,22	03969246
M2 Extension, L = 50 mm	Carbon	M2	–	50	–	1	03969238
M2 Extension, L = 70 mm	Carbon	M2	–	70	–	1,3	03969239
M2 Extension, L = 90 mm	Carbon	M2	–	90	–	1,5	03969240
M2 Extension, L = 40 mm	Carbon	M2	–	40	–	0,9	03969270
M3 Extensions							
M3 Extension, L = 10 mm	Steel	M3	–	10	–	0,8	03969044
M3 Extension, L = 20 mm	Steel	M3	–	20	–	1,8	03969045
M3 Extension, L = 35 mm	Steel	M3	–	35	–	2,9	03969320
M4 Extensions							
M4 Extension, L = 30 mm	Ceramic	M4	–	30	–	5,1	03969401

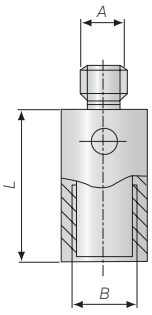


Probe Adapters



Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
Adapters							
M2/M3 adapter	Steel	M2	–	7	M3	0,5	03969061
M3/M2 adapter	Steel	M3	–	5	M2	0,5	03969062
M4/M3 adapter	Steel	M4	–	9	M3	1,4	03969403



Joints

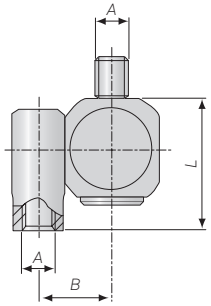


Technical Characteristics

Description	Material	Dimensions (mm) A	D	L	B	Weight (g)	Part No.
Joints							
M2 joint	Steel	M2	–	8	4,5	1,7	03969059
M3 joint	Steel	M3	–	12	6	3,8	03969060

Additional Accessories

- Socket head key, 1.5 mm — part no. 042086
- M2-M3 stylus key — part no. 047866
- Key for carbon-fiber stylus — part no. 050697



Styli Kits

Technical Characteristics

Description	QTY	Part No.
Stylus kit 8 - M2		*0396086*
Tool key for stylus	2	047866
Tool key	2	049652
Tool key	2	050697
5-way crosspiece, M2	1	03969054
5-way-star stylus, M2	1	03969082
Storage case for accessories	1	03969085
Stylus, Ø 2 mm, Ruby ball, M2	1	03969202
Stylus, Ø 4 mm, Ruby ball, M2	1	03969204
Stylus, Ø 2 mm, Ruby ball, M2	2	03969212
Stylus, Ø 3 mm, Ruby ball, M2	2	03969213
Stylus, Ø 1 mm, Ruby ball, Tungsten carbid, M2	1	03969221
Extension, L 10 mm, M2	1	03969231
Extension, L 20 mm, M2	1	03969232
Stylus, L 50 mm, Carbon, M2	1	03969260
Extension, L 40 mm, Carbon, M2	1	03969270
Stylus kit 1 - M2		*03969075*
Tool key for stylus	1	047866
5-way crosspiece, M2	1	03969054
5-way-Star stylus, M2	1	03969081
Storage case for accessories	1	03969078
Stylus, Ø 1 mm, Ruby ball, M2	2	03969201
Stylus, Ø 2 mm, Ruby ball, M2	4	03969202
Stylus, Ø 3 mm, Ruby ball, M2	2	03969203
Stylus, Ø 4 mm, Ruby ball, M2	1	03969204
Stylus, Ø 6 mm, Ruby ball, M2	1	03969206
Stylus, Ø 2 mm, Ruby ball, M2	2	03969212
Stylus, Ø 3 mm, Ruby ball, M2	2	03969213
Stylus, Ø 4 mm, Ruby ball, M2	1	03969214
Extension, L 5 mm, M2	2	03969230
Extension, L 10 mm, M2	2	03969231
Extension, L 20 mm, M2	2	03969232
Extension, L 30 mm, M2	2	03969233
Cylinder stylus	1	03969253
Accessory Kit M3		*03969040*
Extension, L 10 mm, M3	1	03969044
Extension, L 20 mm, M3	1	03969045
5-way crosspiece, M3	1	03969046
Mounted probe, Ø 6,35 mm	1	03969047
Stylus, Ø 2 mm, Ruby ball, M3	1	03969302
Stylus, Ø 3 mm, Ruby ball, M3	1	03969303
Stylus, Ø 4 mm, Ruby ball, M3	1	03969304
Accessory Kit 3 M3		*03969102*
Extension, L 10 mm, M3	1	03969044
Extension, L 20 mm, M3	1	03969045
5-way crosspiece, M3	1	03969046
Stylus, Ø 2 mm, Ruby ball, M3	1	03969302
Stylus, Ø 3 mm, Ruby ball, M3	1	03969303
Stylus, Ø 4 mm, Ruby ball, M3	1	03969304

Description	QTY	Part No.
Stylus kit 3 - M2		*03969063*
Socket head key, 1,5 mm	1	042086
Tool key for stylus	2	047866
5-way-Star stylus, M2	1	03969082
Stylus Joint, M2	1	03969059
Storage case for accessories	1	03969078
Stylus, Ø 1 mm, Ruby ball, M2	1	03969201
Stylus, Ø 2 mm, Ruby ball, M2	1	03969202
Stylus, Ø 3 mm, Ruby ball, M2	1	03969203
Stylus, Ø 2 mm, Ruby ball, M2	1	03969212
Stylus, Ø 3 mm, Ruby ball, M2	1	03969213
Extension, L 10 mm, M2	2	03969231
Disc Stylus, Ø 6 mm, L 10 mm, M2	1	03969241
Disc Stylus, Ø 18 mm, L 7,55 mm, M2	1	03969242
Stylus kit 7 - M2		*03969076*
Socket head key, 1,5 mm	1	042086
Tool key for stylus	2	047866
5-way crosspiece, M2	1	03969054
5-way-Star stylus, M2	1	03969082
Stylus Joint, M2	1	03969059
Storage case for accessories	1	03969078
Stylus, Ø 1 mm, Ruby ball, M2	2	03969201
Stylus, Ø 2 mm, Ruby ball, M2	6	03969202
Stylus, Ø 3 mm, Ruby ball, M2	2	03969203
Stylus, Ø 4 mm, Ruby ball, M2	2	03969204
Stylus, Ø 2 mm, Ruby ball, M2	2	03969212
Stylus, Ø 3 mm, Ruby ball, M2	1	03969213
Stylus, Ø 4 mm, Ruby ball, M2	1	03969214
Stylus, Ø 1 mm, Ruby ball, tungsten, M2	1	03969221
Extension, L 10 mm, M2	2	03969231
Extension, L 20 mm, M2	1	03969232
Accessory Kit 2 M3		*03969101*
Extension, L 10 mm, M3	2	03969044
Extension, L 20 mm, M3	1	03969045
5-way crosspiece, M3	1	03969046
Stylus, Ø 2 mm, Ruby ball, M3	1	03969302
Stylus, Ø 3 mm, Ruby ball, M3	4	03969303
Stylus, Ø 4 mm, Ruby ball, M3	1	03969304
Stylus kit - M2		*03969087*
Stylus, Ø 1 mm, Ruby ball, M2	1	03969201
Stylus, Ø 2 mm, Ruby ball, M2	1	03969202
Stylus, Ø 3 mm, Ruby ball, M2	1	03969203
Stylus, Ø 4 mm, Ruby ball, M2	1	03969204
Extension, L 10 mm, M2	1	03969231
Extension, L 20 mm, M2	1	03969232
Extension, L 30 mm, M2	1	03969233

HH-A
CONTENTS OF THE AVAILABLE SETS

		Flange HH-A to DEA	Flange HH-A -2.5 to DEA	Ø 9,5mm Shaft for HH-A	Ø 20mm Shaft for HH-A	Ø 12mm Shaft for HH-A	Sub-D HD 15 Pin	Sub-D 15 Pin	LEMO 14 Pin	Sub-D HD 15 Pin Sheffield	LEMO 14 Pin L300mm	PROBE HEAD
		03939382	03939383	03939370	03939371	03939372	03939065	03939066	03939067	03939068	053450	
	HH-A-T5											
Set 1	03939450											X
Set 2	03939051			X			X					X
Set 3	03939052				X			X				X
Set 4	03939053							X				X
Set 5	03939054			X				X				X
Set 6	03939055	X						X				X
Set 7	03939056			X						X		X
Set 8	03939057	X								X		X
Set 9	03939059					X					X	X
	HH-A-M5											
Set 1	03939400											X
Set 2	03939201			X			X					X
Set 3	03939202			X				X				X
Set 4	03939203	X						X				X
Set 5	03939205				X		X					X
	HH-A-7.5											
Set 1	03939360											X
Set 2	03939365			X			X					X
Set 3	03939366			X				X				X
Set 4	03939367			X						X		X
Set 5	03939368	X						X				X
	HH-A-M7.5											
Set 1	03939361											X
Set 2	03939375			X			X					X
Set 3	03939376			X				X				X
Set 4	03939377			X						X		X
Set 5	03939378	X						X				X
	HH-A-T2.5											
	03939420	Cables and Shanks sold seperately										
	HH-A-H2.5											
	03939430	Cables and Shanks sold seperately										

HH-AS
AVAILABLE ADAPTER

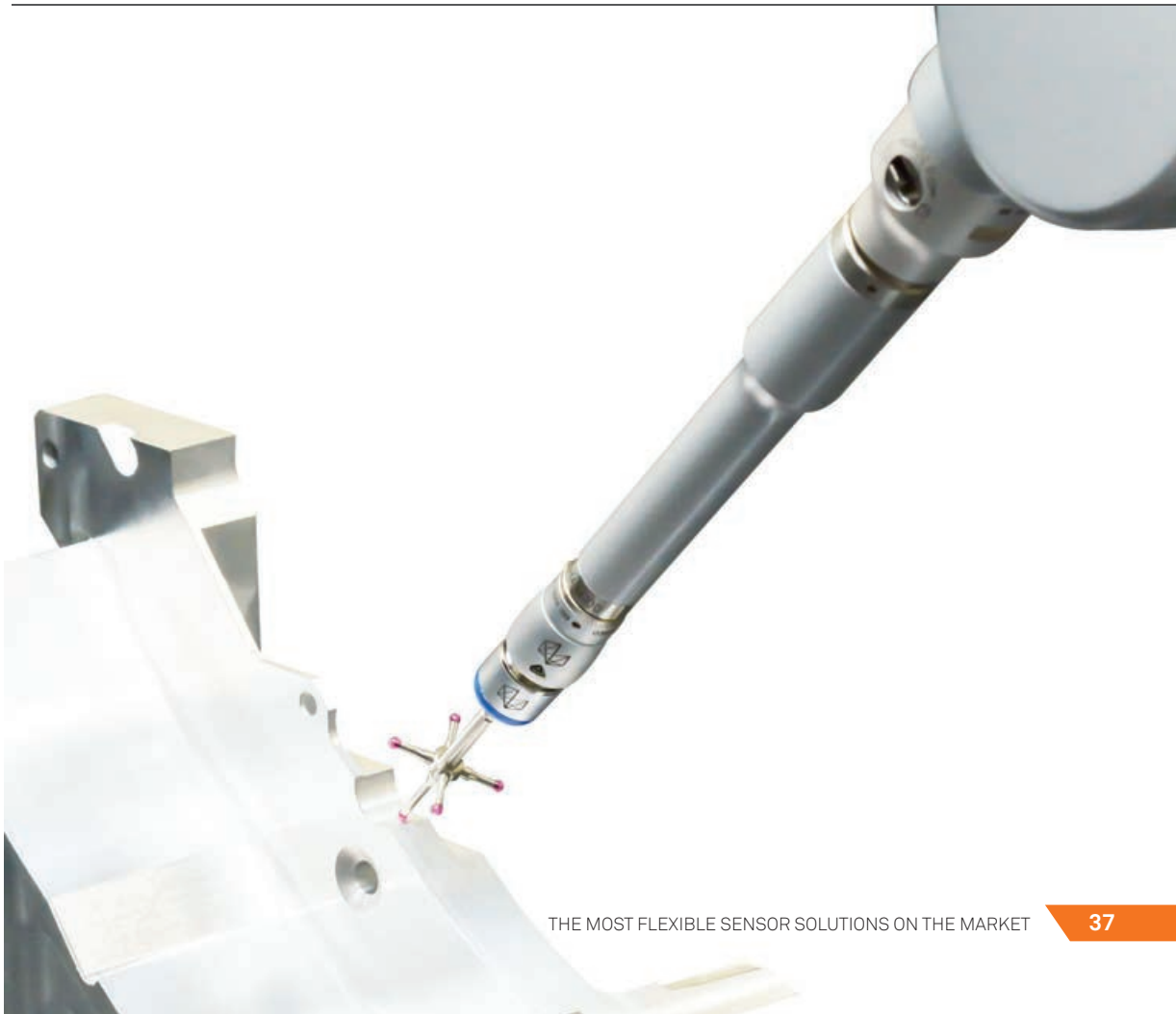
	Sub-D15 Pin	Adapter Sub-D HD15 pin Sheffield	Adapter LEMO 14 Pin L300mm	Adapter Sub-D HD15 Pin
	Built-in	03960289	03960290	03960291
HH-AS8-T5				
03939270	X			
HH-AS6-T5				
03939260	X			
HH-AS8-T7.5				
03939262	X			
HH-AS8-T2.5				
03939422	X			
HH-AS8-H2.5				
03939431	X			
HH-AS8-M5				
03939290	X			
HH-AS6-M5				
03939280	X			
HH-AS8-M7.5				
03939363	X			

HH-P
CONTENTS OF THE AVAILABLE SETS

	047714	Built-in	Built-in	Built-in	Built-in	050030	050031	050032	050033	050034	050035
	d9,5mm Shaft	DIN 5 Pin Connection	Sub-D HD 15 Pin Connection	Sub-D 15 Pin Connection	LEMO 14 Pin Connection	M3 Stylus 2 x 21mm	M3 Stylus 3 x 21mm	M3 Stylus 4 x 21mm	M3 Extension L10mm	M3 Extension L20mm	Star stylus connector
HH-P											
03939019		X				X					
03939020	X	X				X					
03939021	X	X				X	X	X	X	X	X
03939024	X				X	X					
03939025	X			X		X					
03939027	X		X			X					

HH-MI
CONTENTS OF THE AVAILABLE SETS AND ADDITIONAL ACCESSORIES

	049524	050032	051555	03969071	03969072	03969073	03969074
	Cable DIN 5 Pin	M3 Stylus 4 x 21mm	D20mm Shaftadapter	Cable DIN-DIN	Cable LEMO	Cable Sub-D 15 Pin	Cable Sub-D, 15 Pin HD
HH-MI							
03939030	X	X					
03939103	X	X	X				
HH-MI-M							
03939031	X						

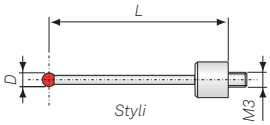


HP-S-X1S ACCESSORIES



Technical Characteristics

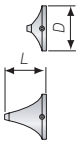
Description	Material	Dimensions (mm) D	L	Weight (g)	QTY	Part No.
Standard-Styli Kit HP-S-X1S incl:						M00-694-009-000
Styli:						
Stylus Ø 1,5 mm, L 20 mm	Steel	1,5	20	1	1	M00-694-210-000
Stylus Ø 3 mm, L 20 mm	Steel	3	20	1	1	M00-694-211-000
Stylus Ø 5 mm, L 20 mm	Steel	5	20	2	1	M00-694-212-000
Stylus Ø 3 mm, L 50 mm	Steel	3	50	2	1	M00-694-220-000
Stylus Ø 5 mm, L 50 mm	Steel	5	50	3	1	M00-694-221-000
Stylus Ø 5 mm, L 100 mm	Steel	5	100	6	1	M00-694-230-000
Mounting key					1	M00-114-006-130
Mounting pin					2	M00-114-006-140



Technical Characteristics

Description	Material	Dimensions (mm) D	L	Weight (g)	Part No.
Additional Styli					
Stylus Ø 1 mm, L 20 mm	Steel	1	20	1	M00-694-214-000
Stylus Ø 8 mm, L 20 mm	Steel	8	20	2	M00-694-213-000
Stylus Ø 8 mm, L 50 mm	Carbon	8	50	3	M00-694-222-000
Stylus Ø 5 mm, L 75 mm	Steel	5	75	5	M00-694-240-000
Stylus Ø 8 mm, L 75 mm	Carbon	8	75	4	M00-694-241-000
Stylus Ø 8 mm, L 100 mm	Carbon	8	100	4	M00-694-231-000

Styli holders



Styli holders					
Stylus holder HP-S-X1S-1	Aluminium	30		7	M00-694-200-000
Stylus holder HP-S-X1S-2	Aluminium	30	15	8	M00-694-206-000
Stylus holder HP-S-X1S-3, Ø 2 mm	Aluminium	30		7	M00-694-208-000

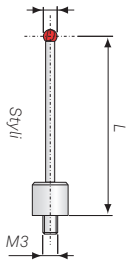
HP-S-X1M ACCESSORIES



Technical Characteristics

Description	Material	Dimensions (mm) D	L	Weight (g)	Part No.
Stylus holder with extension X1m-1	Carbon	30	100	11	M00-694-201-000
Stylus holder with extension X1m-2	Carbon	30	115	11	M00-694-202-000
Stylus holder with extension X1m-3	Carbon	30	150	12	M00-694-207-000

HP-S-X1H ACCESSORIES





Styli Holder

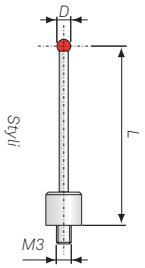


Styli Holder

Technical Characteristics

Description	Material	Dimensions (mm) D	L	Weight (g)	QTY	Part No.
Standard Styli Kit HP-S-X1H incl.:						M00-694-014-000
Stylus holder						
Stylus holder, M3	Aluminium			7	1	M00-694-209-000
Stylus holder HP-S-X1H, rotatable	Aluminium/Steel	30	25,5	15	1	M00-694-244-000
Styli						
Stylus Ø 3 mm, L 20 mm	Steel	3	20	1	2	M00-694-211-000
Stylus Ø 5 mm, L 20 mm	Steel	5	20	2	1	M00-694-212-000
Stylus Ø 5 mm, L 50 mm	Steel	5	50	3	1	M00-694-221-000
Stylus Ø 8 mm, L 75 mm	Carbon	8	75	4	1	M00-694-241-000
Extensions						
Extension L 50 mm	Carbon	5,5	50	2	1	M00-694-245-000
Extension L 150 mm	Carbon	5,5	150	5	1	M00-694-248-000
Cube						
Cube L 13 mm	Aluminium		13	2,5	1	M00-694-243-000
Mounting key					1	M00-114-006-130
Mounting pin					2	M00-114-006-140

HP-S-X1C ACCESSORIES



Technical Characteristics

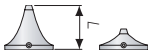
Description	Material	Dimensions (mm) D	L	Weight (g)	QTY	Part No.
Standard Styli Kit HP-S-X1C incl. :						M00-694-008-000
Taster						
Stylus Ø 1,5 mm, L 20 mm	Steel	1,5	20	1	2	M00-694-210-000
Stylus Ø 3 mm, L 20 mm	Steel	3	20	1	4	M00-694-211-000
Stylus Ø 5 mm, L 20 mm	Steel	5	20	2	1	M00-694-212-000
Stylus Ø 3 mm, L 50 mm	Steel	3	50	2	2	M00-694-220-000
Stylus Ø 5 mm, L 50 mm	Steel	5	50	3	1	M00-694-221-000
Stylus Ø 5 mm, L 75 mm	Steel	5	75	5	1	M00-694-240-000
Stylus holder 5 x M3			0	15	1	M00-694-270-000
Stylus holder, M3, Al					1	M00-694-209-000
Mounting key					2	M00-114-006-130
Mounting pin					2	M00-114-006-140

HP-S-X1H | HP-S-X1C ACCESSORIES

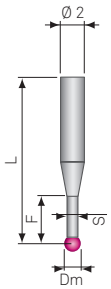
Technical Characteristics

Description	Material	Dimensions (mm) D	L	Weight (g)	Thread	Part No.
Additional Styli						
Stylus Ø 1 mm, L 20 mm	Steel	1	20	1	–	M00-694-214-000
Stylus Ø 1,5 mm, L 20 mm	Steel	1,5	20	1	–	M00-694-210-000
Stylus Ø 3 mm, L 20 mm	Steel	3	20	1	–	M00-694-211-000
Stylus Ø 5 mm, L 20 mm	Steel	5	20	2	–	M00-694-212-000
Stylus Ø 8 mm, L 20 mm	Steel	8	20	2	–	M00-694-213-000
Stylus Ø 3 mm, L 50 mm	Steel	3	50	2	–	M00-694-220-000
Stylus Ø 5 mm, L 50 mm	Steel	5	50	3	–	M00-694-221-000
Stylus Ø 8 mm, L 50 mm	Carbon fibre	8	50	3	–	M00-694-222-000
Stylus Ø 5 mm, L 75 mm	Steel	5	75	5	–	M00-694-240-000
Stylus Ø 8 mm, L 75 mm	Carbon fibre	8	75	4	–	M00-694-241-000
Stylus Ø 5 mm, L 100 mm	Steel	5	100	6	–	M00-694-230-000
Stylus Ø 8 mm, L 100 mm	Carbon fibre	8	100	4	–	M00-694-231-000
					–	
Styli holders and extensions					–	
Stylus holder, M3	Aluminium			7	–	M00-694-209-000
Stylus holder X1H, drehbar	Aluminium/Steel	30	25,5	15	–	M00-694-244-000
Extension L 20 mm	Steel	–	20	–	–	M00-694-280-000
Extension L 50 mm	Carbon fibre	5,5	50	2	–	M00-694-245-000
Extension L 150 mm	Carbon fibre	5,5	150	5	–	M00-694-248-000
					–	
Stylus holder, Ø 2 mm, Al	Aluminium	–	–	7	Ø 2	M00-694-275-000
Stylus holder 5 x Ø 2 mm	Aluminium	–	22,5	17	Ø 2	M00-694-271-000
Stylus holder 9 x Ø 2 mm	Aluminium	–	22,5	18	Ø 2	M00-694-272-000
Stylus holder 9 x M3	Aluminium	–	22,5	16	M3	M00-694-273-000
Stylus holder	Aluminium	30° 40°	22,5	2	M3	M00-694-274-000
Extension M3	Steel	–	20	3	M3	M00-694-280-000
Cube						
Cube L 13mm	Aluminium	–	13	2,5	–	M00-692-243-000

Styli Holders

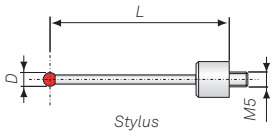


Special Styli

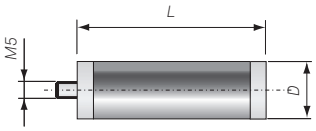


Description	Material	Dimensions (mm) Dm	S	L	F	Weight (g)	Part No.
Special Stylus Ø 0,3 mm, L 22 mm	HM	0,3	0,2	22	4	1	M00-694-067-005
Special Stylus Ø 0,5 mm, L 22 mm	HM	0,5	0,3	22	4	1	M00-694-064-005
Special StylusØ 0,8 mm, L 22 mm	HM	0,8	0,6	22	4	1	M00-694-063-005
Special Stylus Ø 1,0 mm, L 22 mm	HM	1,0	0,8	22	4	1	M00-694-062-005
Special Stylus Ø 1,5 mm, L 22 mm	HM	1,5	1,2	22	4	1	M00-694-066-005

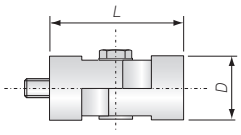
HP-S- X3 ACCESSORIES



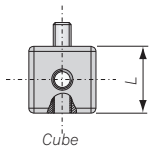
Stylus



Extensions



Articulation 0°- 90°



Cube

Technical Characteristics

Description	Material	Dimensions (mm) D	Dimensions (mm) L	Weight (g)	QTY	Part No.
Standard Styli Kit HP-S-X3 incl.						M00-694-007-000
Styli						
Stylus Ø 2 mm, L 30 mm	HM	2	30	10	2	060-694.150-007
Stylus Ø 3 mm, L 50 mm	HM	3	50	11	4	060-694.051-000
Stylus Ø 5 mm, L 60 mm	HM	5	60	18	2	060-694.053-000
Stylus Ø 5 mm, L 80 mm	HM	5	80	19	2	060-694.054-000
Extensions						
Extension Ø 12 x 20 mm	Titanium	12	20	9	2	060-694.036-000
Extension Ø 12 x 40 mm	Titanium	12	40	15	1	060-694.035-000
Extension Ø 12 x 70 mm	Titanium	12	70	18	1	060-813.033-000
Stylus holder	Aluminium	–	–	42	1	M00-114-100-000
Stylus joint						
Stylus joint 0° - 90°	Titanium	12	34	21	1	060-813.051-000
Cubes						
Cube	Aluminium	–	15	14	2	M00-114-101-000
Rotary joint	–	–	–	27		M00-114-102-000
Allen key 3 mm DIN 911						M02-B04-703-100
Allen key 4 mm DIN 911						M02-B04-703-101

HP-S-X5 ACCESSORIES

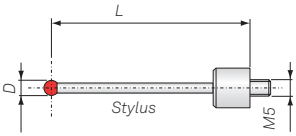
Temperature Sensor

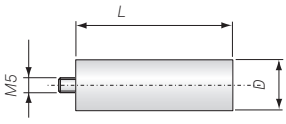


The exchangeable temperature sensor and accessories capture the temperature of the workpiece. As with other accessories, the temperature sensor may be automatically changed during the measurement routine.

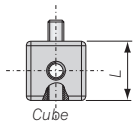
Article	Part No.
Exchangeable Temperatur Sensor Basis Kit (incl. Clamping, Sensor), calibrated	M00-741-073-000
Exchangeable Temperatur Sensor Complete Kit (incl. Clamping, Sensor, Joint, Extension), calibrated	M00-741-079-000
Extension	M00-741-062-150
Joint	M00-741-062-050

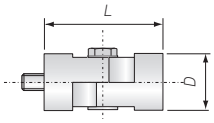
Technical Characteristics





Extensions



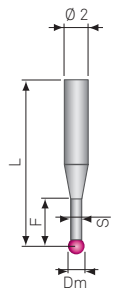


Articulation 0°- 90°

Description	Material	Dimensions (mm) D	L	Weight (g)	QTY	Part No.
Standard Styli Kit for M5 Threads incl. :						M00-694-006-000
Styli						
Stylus Ø 1,5 mm, L 28 mm	HM	1,5	28	10	2	M00-694-150-016
Stylus Ø 3 mm, L 35 mm	HM	3	35	11	4	060-694.050-000
Stylus Ø 5 mm, L 80 mm	HM	5	80	19	2	060-694.054-000
Stylus Ø 8 mm, L 130 mm	HM	8	130	63	1	M00-694-138-000
Stylus Ø 8 mm, L 176 mm	HM	8	176	38	1	060-694-150-014
Extensions						
Extension Ø 12 x 20 mm	Titanium	12	20	9	1	060-694.036-000
Extension Ø 12 x 50 mm	Titanium	12	50	16	1	060-813.034-000
Extension Ø 12 x 70 mm	Titanium	12	70	18	1	060-813.033-000
Extension Ø 18 x 100 mm	Titanium	18	100	43	1	060-694.032-000
Extension Ø 18 x 200 mm	Titanium	18	200	68	1	060-694.030-000
Cubes						
Cube 15 mm x 15 mm	HM	–	15	11	2	060-694.016-000
Cube 20 mm x 20 mm	HM	–	20	32	1	060-684.044-000
Stylus joint						
Stylus joint 0°- 90°	Aluminium	18	38	41	1	M00-694-010-000
Allen key 1,5 mm DIN 911						M02-B04-703-097
Allen key 3 mm DIN 911						M02-B04-703-100

HP-S-X3C | HP-S-X3T | HP-S-X5 ADDITIONAL ACCESSORIES

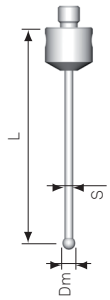
Special Styli, Shaft Ø 2 mm



Technical Characteristics

Description	Material	Dimensions (mm) Dm	S	L	F	Weight (g)	Part No.
Special Stylus, Ø 2,0 mm, L 22 mm	HM	2,0	1,5	22	9,6	1	060-694.065-000
Special Stylus, Ø 1,5 mm, L 22 mm	HM	1,5	1,2	22	9,6	1	060-694.066-000
Special Stylus, Ø 1,0 mm, L 22 mm	HM	1,0	0,8	22	4	1	M00-694-062-005
Special Stylus, Ø 0,8 mm, L 22 mm	HM	0,8	0,6	22	4	1	M00-694-063-005
Special Stylus, Ø 0,5 mm, L 22 mm	HM	0,5	0,3	22	4	1	M00-694-064-005
Special Stylus, Ø 0,3 mm, L 22 mm	HM	0,3	0,2	22	4	1	M00-694-067-005
Special Stylus, Ø 1,0 mm, L 34 mm	HM	1,0	0,8	34	14		M02-J01-100-008

Diamond Styli

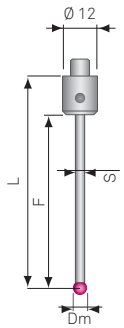


Technical Characteristics

Description	Material	Dimensions (mm) Dm[1]	S[1]	L[1]	Weight (g)	Thread	Part No.
Special Stylus, Ø 1,0 mm, L 22 mm, Diamond	HM	1,0	2,0	22	1	2mm	M00-694-190-000
Stylus, Ø 3,0 mm, L 30 mm, Diamond	HM	3,0	2,0	30	7	M5	M00-694-194-000
Stylus, Ø 3,0 mm, L 35 mm, Diamond	HM	3,0	2,0	35	7	M5	M00-694-192-000
Stylus, Ø 3,0 mm, L 50 mm, Diamond	HM	3,0	2,0	50	7	M5	M00-694-193-000
Stylus, Ø 3,0 mm, L 60 mm, Diamond	HM	3,0	2,0	60	8	M5	M00-694-195-000

[1] *further sizes available on request*

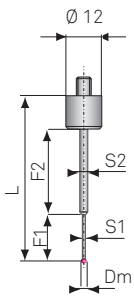
M5 Styli



Technical Characteristics

Description	Material	Dimensions (mm) Dm	S	L	F	Weight (g)	Part No.
Stylus, Ø 12 mm, L 500 mm	Ceramic	12	8	500	475	128	M00-694-113-000
Stylus, Ø 10 mm, L 350 mm	Ceramic	10	7	350	325	85	M00-694-112-000
Stylus, Ø 10 mm, L 300 mm	Ceramic	10	7	300	275	76	M00-694-111-000
Stylus, Ø 10 mm, L 250 mm	Ceramic	10	7	250	225	31	M00-694-110-000
Stylus, Ø 8 mm, L 176 mm	HM	8	6	176	158	83	060-694.150-014
Stylus, Ø 8 mm, L 130 mm	HM	8	6	130	112	63	M00-694-138-000
Stylus, Ø 8 mm, L 130 mm, Si3N4, Infinity	HM	8	6	130	112	65	M00-694-143-000
Stylus, Ø 8 mm, L 125 mm	Ceramic	8	6	125	107	27	060-813.041-000
Stylus, Ø 8 mm, L 125 mm, Si3N4	HM	8	6	125	107	60	M00-694-125-000
Stylus, Ø 8 mm, L 125 mm, Si3N4	Ceramic	8	6	125	107	21	M00-694-129-000
Stylus, Ø 8 mm, L 90 mm	HM	8	6	90	72	47	060-694.056-000
Stylus, Ø 8 mm, L 90 mm	Ceramic	8	6	90	72	22	060-813.042-000
Stylus, Ø 5 mm, L 80 mm	HM	5	3,5	80	67	19	060-694.054-000
Stylus, Ø 5 mm, L 80 mm, Infinity, Si3N4	HM	5	3,5	80	67	21	M00-694-142-000
Stylus, Ø 5 mm, L 80 mm, Si3N4	HM	5	3,5	80	67	21	M00-694-123-000
Stylus, Ø 5 mm, L 60 mm	HM	5	3,5	60	47	18	060-694.053-000
Stylus, Ø 4 mm, L 80 mm	HM	4	2,5	80	69	15	M00-694-150-018
Stylus, Ø 4 mm, L 55 mm	HM	4	2,5	55	44	13	M00-694-150-017
Stylus, Ø 4 mm, L 55 mm, Si3N4	HM	4	2,5	55	44	12	M00-694-132-000
Stylus, Ø 3 mm, L 50 mm	HM	3	2	50	39	11	060-694.051-000
Stylus, Ø 3 mm, L 50 mm, Si3N4	HM	3	2	50	39	9	M00-694-121-000
Stylus, Ø 3 mm, L 35 mm	HM	3	2	35	24	11	060-694.050-000
Stylus, Ø 2 mm, L 41 mm	HM	2	1,5	41	30	10	060-694.150-013
Stylus, Ø 2 mm, L 30 mm	HM	2	1,5	30	19	10	060-694.150-007
Stylus, Ø 2 mm, L 30 mm, Si3N4	HM	2	1,5	30	19	10	M00-694-126-000
Stylus, Ø 1,5 mm, L 28 mm	HM	1,5	1	28	7	10	M00-694-150-016
Stylus, Ø 1.5 mm, L 28 mm, Si3N4	HM	1,5	1	28	7	10	M00-694-131-000

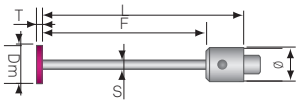
M5 Styli, Taper Shaft



Technical Characteristics

Description	Material	Dimensions (mm) Dm	S1/S2	L	F1/F2	Weight (g)	Part No.
Stylus, Ø 2 mm, L 66 mm, tapered	HM	2	1,5/4	66	15/56	13	060-694.150-006
Stylus, Ø 1,5 mm, L 53 mm, tapered	HM	1,5	1/3,5	53	10/40	15	M00-694-150-019

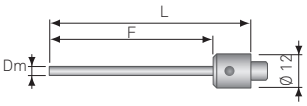
M5 Disc Styli



Technical Characteristics

Description	Dimensions (mm)				Weight	Part No.
	Dm/T	S	L	F	(g)	
Disc stylus, Ø 35 mm, Ceramic, HM	35/4	12	11	–	25	M00-694-152-014
Disc stylus, Ø 16 mm, Ceramic, HM	16/2,5	3,5	58	45	20	060-694.152-012
Disc stylus, Ø 8 mm, Ruby, HM	8/1	2,5	56	45	13	060-694.152-011

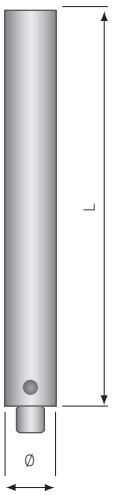
M5 Cylinder styli



Technical Characteristics

Description	Material	Dimensions (mm)			Weight	Part No.
		Dm	L	F	(g)	
Cylinder stylus, Ø 3 mm, L 50 mm	HM	3	50	37	15	060-694.152-008

Extensions, Ø 12, 18 and 31 mm



Technical Characteristics

Description	Material	L (mm)	Weight (g)	Part No.
Extension, Ø 12 mm, L 100 mm	Titanium	100	21	060-813.032-000
Extension, Ø 12 mm, L 70 mm	Titanium	70	18	060-813.033-000
Extension, Ø 12 mm, L 50 mm	Titanium	50	16	060-813.034-000
Extension, Ø 12 mm, L 40 mm	Titanium	40	15	060-694.035-000
Extension, Ø 12 mm, L 20 mm	Titanium	20	9	060-694.036-000
Extension, Ø 18 mm, L 200 mm	Titanium	200	68	060-694.030-000
Extension, Ø 18 mm, L 150 mm	Titanium	150	70	060-694.031-000
Extension, Ø 18 mm, L 100 mm	Titanium	100	43	060-694.032-000
Extension, Ø 18 mm, L 80 mm	Titanium	80	39	060-694.033-000
Extension, Ø 18 mm, L 60 mm	Titanium	60	34	060-694.034-000
Extension, Ø 18 mm, L 20 mm	Titanium	20	22	060-694.037-000
Extension, CFK, Ø 18 mm, L 300 mm	Carbon	300	74	M00-694-043-000
Extension, CFK, Ø 18 mm, L 200 mm	Carbon	200	48	M00-694-042-000
Extension, CFK, Ø 18 mm, L 100 mm	Carbon	100	43	M00-694-041-000
Extension, CFK, Ø 18 mm, L 80 mm	Carbon	80	40	M00-694-040-000
Extension, CFK, Ø 18 mm, L 60 mm	Carbon	60	37	M00-694-038-000
Extension, CFK, Ø 31 mm, L 800 mm	Carbon	800	264	M00-694-168-000
Extension, CFK, Ø 31 mm, L 600 mm	Carbon	600	228	M00-694-166-000
Extension, CFK, Ø 31 mm, L 500 mm	Carbon	500	202	M00-694-165-000
Extension, CFK, Ø 31 mm, L 400 mm	Carbon	400	169	M00-694-164-000
Extension, CFK, Ø 31 mm, L 300 mm	Carbon	300	147	M00-694-163-000

Styli Kits for Gear Inspection

Technical Characteristics

Description	Weight (g)	QTY	Part No.
Styli Kit for helical gears, Mn 1,5 - 5 mm			M00-694-022-000
Extension, Ø 18 mm, L 20 mm	22	1	060-694.037-000
Stylus holder, 8 x M5 + 8 x Ø 2 mm	78	1	M00-694-084-000
Extensions, Ø 12 mm, L 50 mm	16	8	060-813.034-000
Stylus, Ø 1,5 mm, L 28 mm	10	8	M00-694-150-016
Styli Kit for helical gears, Mn > 5 mm			M00-694-023-000
Extension, Ø 18 mm, L 60 mm	34	1	060-694.034-000
Stylus holder, 8 x M5 + 8 x Ø 2 mm	78	1	M00-694-084-000
Extensions, Ø 12 mm, L 40 mm	15	8	060-694.035-000
Stylus, Ø 5 mm, L 80 mm	19	8	060-694.054-000
Styli Kit for internal helical gears, Mn 1,5 - 5 mm			M00-694-045-000
Cube, 20 mm	32	2	060-684.044-004
Stylus, Ø 1,5 mm, L 28 mm	10	8	M00-694-150-016
Extensions, Ø 18 mm, L 80 mm	39	8	060-694.033-000

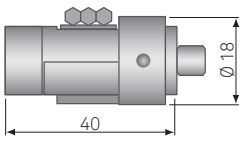
Styli Kits for Gear Inspection

Technical Characteristics

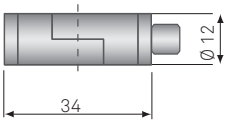
Description	Weight (g)	QTY	Part No.
Styli Kit for internal helical gears, Mn 5 - 35 mm			M00-694-046-000
Cube, 20 mm	32	2	060-684.044-004
Stylus, Ø 5 mm, L 80 mm	19	8	060-694.054-000
Extensions, Ø 18, L 100 mm		8	M00-694-032-004
Styli Kit for spiral bevel gears, Mn 1,5 - 5 mm			M00-694-047-000
Stylus holder, 6 x M5, 30° slant	79	1	M00-694-097-000
Stylus, Ø 1,5 mm, L 28 mm	10	6	M00-694-150-016
Styli Kit for spiral bevel gears, Mn > 5 mm			M00-694-048-000
Stylus holder, 6 x M5, 30° slant	79	1	M00-694-097-000
Stylus, Ø 5 mm, L 80 mm	19	6	060-694.054-000
Extensions, Ø 12 mm, L 50 mm	16	6	060-813.034-000

Styli kits for the inspection of helical gears with a module of smaller than 1.5 mm available on request.

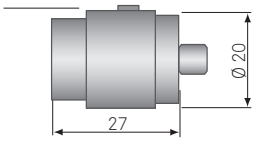
Joints and Cubes



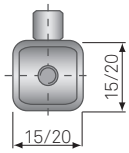
Stylus Joint 0°- 90°, Ø 18 mm
M00-694-010-000
Weight: 41 g



Stylus Joint 0°- 90°, Ø 12 mm
060-813.051-000
Weight: 21 g

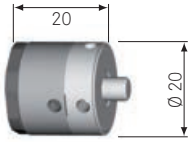


Rotary Joint, Ø 20 mm
060-694.013-000
Weight: 49 g

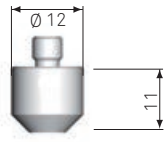


Cube, L 15 mm
060-694.016-000
Weight: 11 g

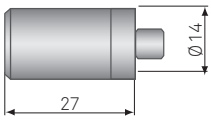
Cube, L 20 mm
060-684.044-000
Weight: 32 g



Rotary Joint, Titanium
M00-114-102-000
Weight: 27 g

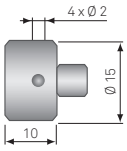


Adapter M5 -> M3
M00-694-018-000
Length: 11 mm

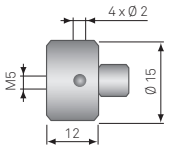


Rotary Joint, Ø 14 mm
060-813.055-000
Weight: 26 g

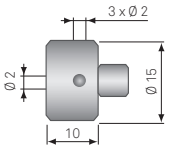
Holder for Special Styli, Shaft Ø 2 mm



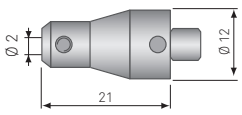
Holder for 4+1
Special Stylus
060-694.060-000
Weight: 8 g



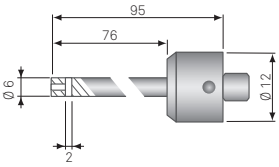
Holder for 4
Special Stylus + M5
M00-694-061-000
Weight: 9 g



Holder for 3 +1
Special Stylus
M00-694-090-000
Weight: 8 g



Holder for 1
Special Stylus
M00-694-068-000
Weight: 8 g

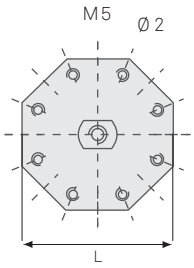


Holder for 1 Special Stylus,
90°, L 95 mm
M00-694-069-000
Weight: 30 g

Multiple Styli Holder for Star Configuration

Technical Characteristics

Description	Styli to use		L (mm)	Weight (g)	Part No.
	M5	2 mm			
Stylus Holder, 5 x M5	5 + 1		32	38	M00-694-081-000
Stylus Holder, 6 x M5 + 6 x Ø 2 mm	6 + 1	6	40	79	M00-694-082-000
Stylus Holder, 7 x M5	7 + 1		29	35	M00-694-083-000
Stylus Holder, 8 x M5 + 8 x Ø 2 mm	8 + 1	8	42	78	M00-694-084-000
Stylus Holder, 8 x Ø 2 mm, L 88 mm		8	88	143	M00-694-085-000
Stylus Holder, 8 x M5, 30° Slant	8 + 1		42	58	M00-694-086-000
Stylus Holder, 8 x Ø 2 mm, L 45 mm		8	45	20	M00-694-091-000
Stylus Holder, 6 x M5, 60° Slant	6 + 1		56	75	M00-694-096-000
Stylus Holder, 6 x M5, 30° Slant	6 + 1		50	79	M00-694-097-000
Stylus Holder, 6 x M5, 75° Slant	6 + 1		65	116	M00-694-103-000
Stylus Holder, 6 x M5, 60° Slant	6 + 1		50	57	M00-694-104-000

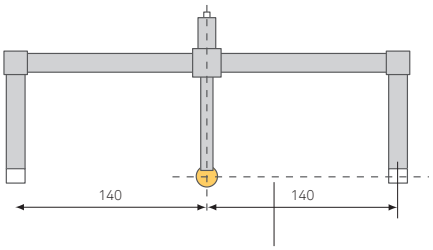


Styli Holder with Adjustable Slant



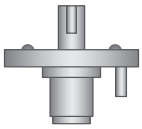
M00-694-017-000
Stylus holder with adjustable slant for 2 x M5
Weight: 97 g

Styli Holder for Constant Velocity Joints

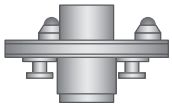


M00-694-095-000
Weight: 133 g

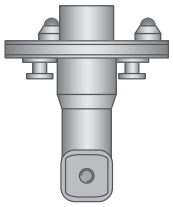
Styli Clampings



Stylus Clamping PMM
060-684.026-000
Weight: 148 g



Stylus Clamping
M00-813-101-000
Weight: 128 g



Stylus Clamping with Cube
M00-813-111-000
Weight: 228 g
Length: 60 mm
Material: Titan

Stylus Clamping with Cube
M00-813-119-000
Weight: 160 g
Length: 60 mm
Material: Al Zn Mg Cu

Stylus Clamping with Cube
M00-813-117-000
Weight: 161 g
Length: 118.5c mm
Material: Titan



Torque Wrench 0,5nm
M02-B04-000-041
for Styli Clampings:
M00-813-101-00,
M00-813-111-000,
M00-813-117-000

Styli Receptacles



Receptacle PMM
060-691.492-000
Weight: 240 g

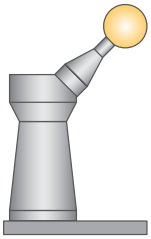


HR-X5-P
M00-153-285-000
Styli receptacle in Y



HR-X5-P-X
M00-153-286-000
Styli receptacle in X

Reference Spheres



Reference Sphere, Ceramic,
with Stand, Ø 30 mm
M00-153-270-000, M8

Reference Sphere,, Ceramic,
with Stand Ø 30 mm,
for Leitz Infinity
M00-314-270-000, M8



Reference Sphere, Ceramic,
without Stand, Ø 30 mm
M00-153-271-000, M8

Reference Sphere, Ceramic,
without Stand, Ø 15 mm,
M00-398-271-000, M4



Reference Sphere, Ceramic,
with Stand, Ø 15 mm
M00-398-270-000, M4



Reference Sphere, Ceramic,
without Stand, Ø 25 mm
M00-689-364-000, M6

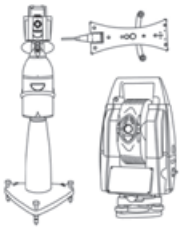


Tommy Bar 100 x 3 mm
060-694.021-011



Chamois Leather
M07-S02-000-012

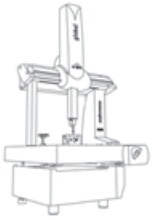
Customized styli and holders are available on request.



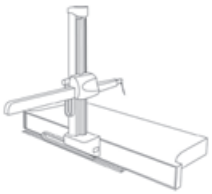
LASER TRACKERS
& STATIONS



PORTABLE MEASURING ARMS



BRIDGE CMMS



HORIZONTAL ARM CMMS



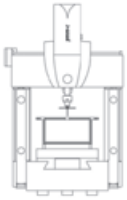
GANTRY CMMS



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