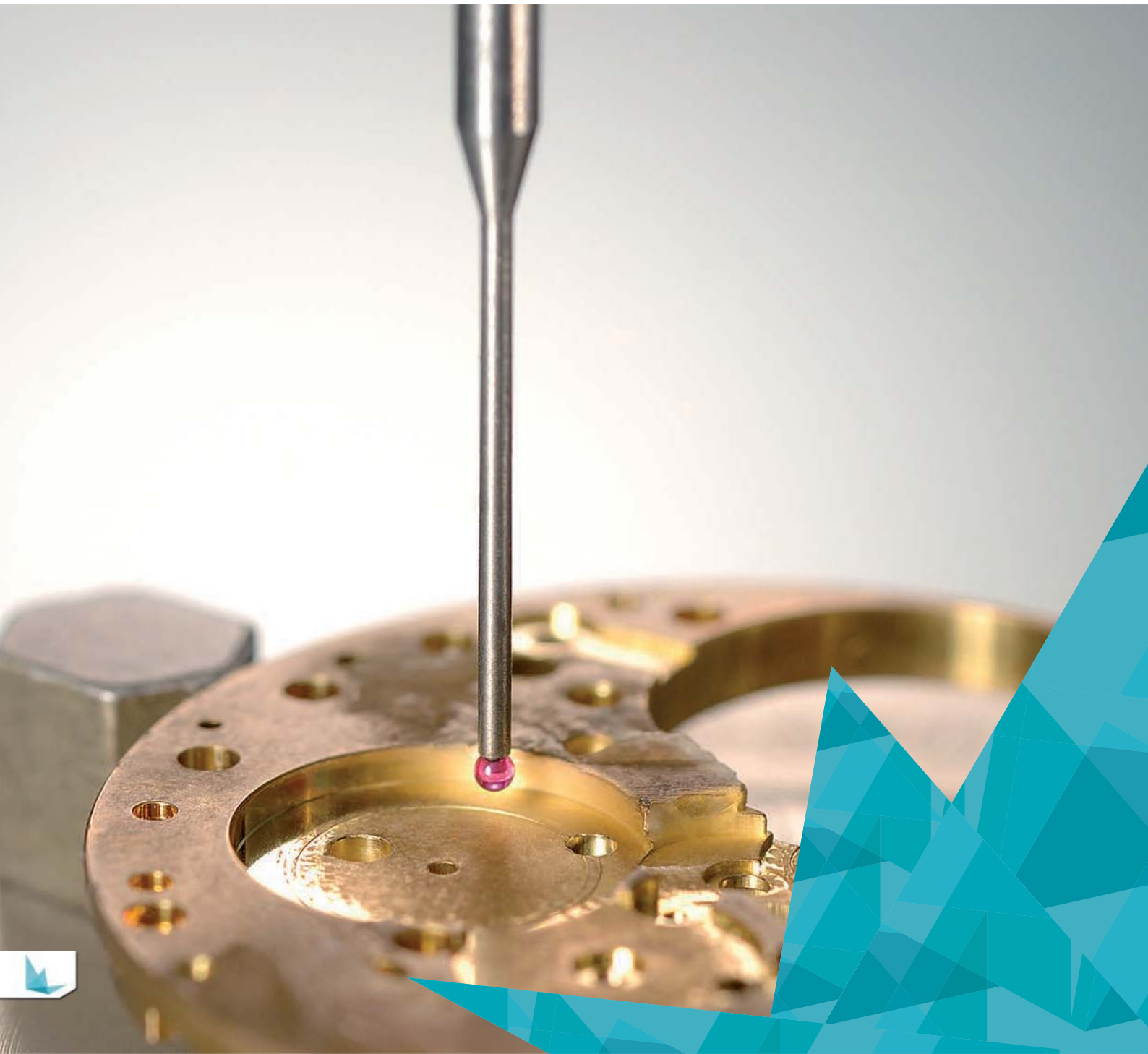


# PROBES & SENSORS

FOR COORDINATE MEASURING MACHINES



# HEXAGON METROLOGY BECOMES HEXAGON MANUFACTURING INTELLIGENCE

As a leading measurement equipment provider, Hexagon Metrology set out to offer complete quality assurance solutions, building an extensive portfolio of metrology equipment through a combination of innovation and acquisition.

In a move to reflect its growing expertise and solutions for integrated industrial manufacturing, global industry leader Hexagon Metrology has rebranded to become Hexagon Manufacturing Intelligence. The change also aligns the business more closely with Hexagon's overall strategy to offer software-centric information technology solutions that improve quality and productivity across entire industry workflows.

As a leading measurement equipment provider, Hexagon Metrology set out to offer complete quality assurance solutions, building an extensive portfolio of metrology equipment through a combination of innovation and acquisition. The company's investment in research and development has yielded technology revolutions that first moved measurement from the quality room to the point of production and then brought metrology data into the wider factory workflow. Recent acquisitions, including the CAD/CAM specialist Vero Software and statistical process control expert Q-DAS, have further expanded the business' offering into broader manufacturing technologies – prompting the decision to rebrand as Hexagon Manufacturing Intelligence.

As Hexagon Manufacturing Intelligence, we are ideally positioned to support these aspirations. We have moved beyond the isolated data capture of traditional metrology, enabling customers to analyse and leverage data for more informed decision making – sensing, thinking and acting, as we call it. We intend to focus our research on connecting these capabilities to offer customers a closed-loop manufacturing approach where quality drives productivity, as well as continuing to develop our core competencies in dimensional metrology.





## BORN FROM EXPERIENCE

**Hexagon Manufacturing Intelligence'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 Manufacturing Intelligence 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

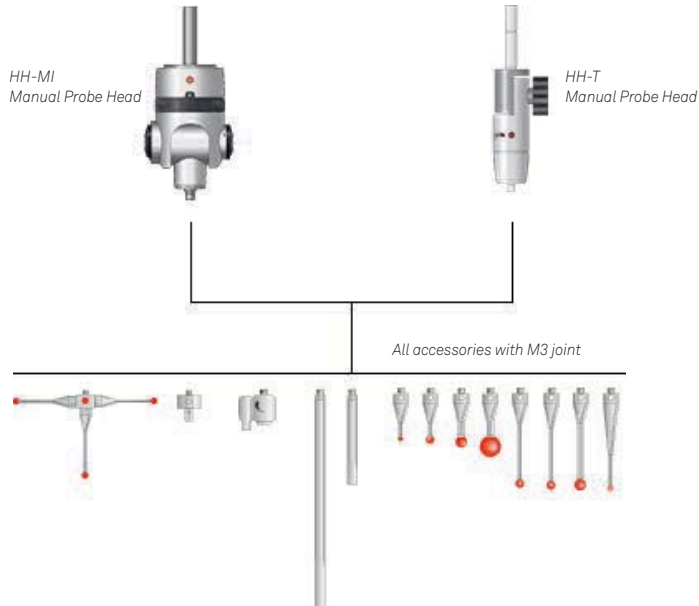
## SENSORS FOR INDUSTRIAL METROLOGY

The Hexagon Manufacturing Intelligence 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 Manufacturing Intelligence and are designed to work together as an integrated product line for maximum application flexibility and enhanced CMM performance.

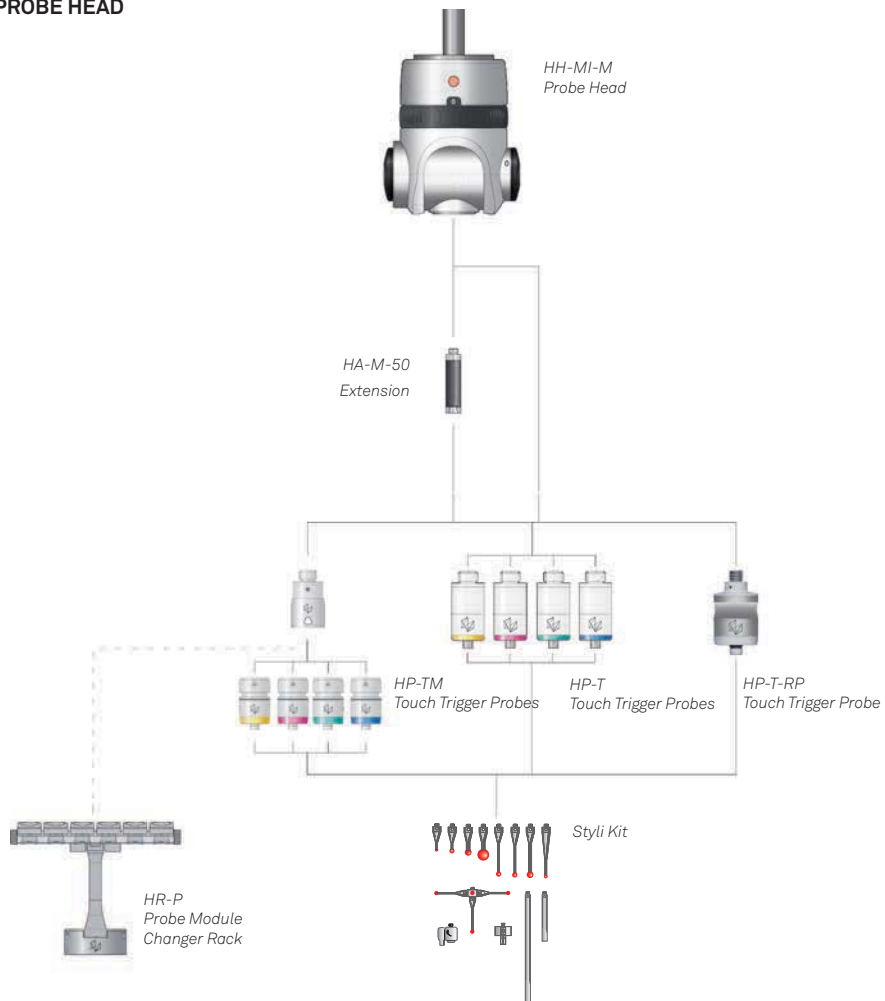
- PROBE HEADS
- TOUCH TRIGGER PROBES
- SCANNING PROBES
- NON-CONTACT SENSORS
- RACKS
- STYLI & ACCESSORIES

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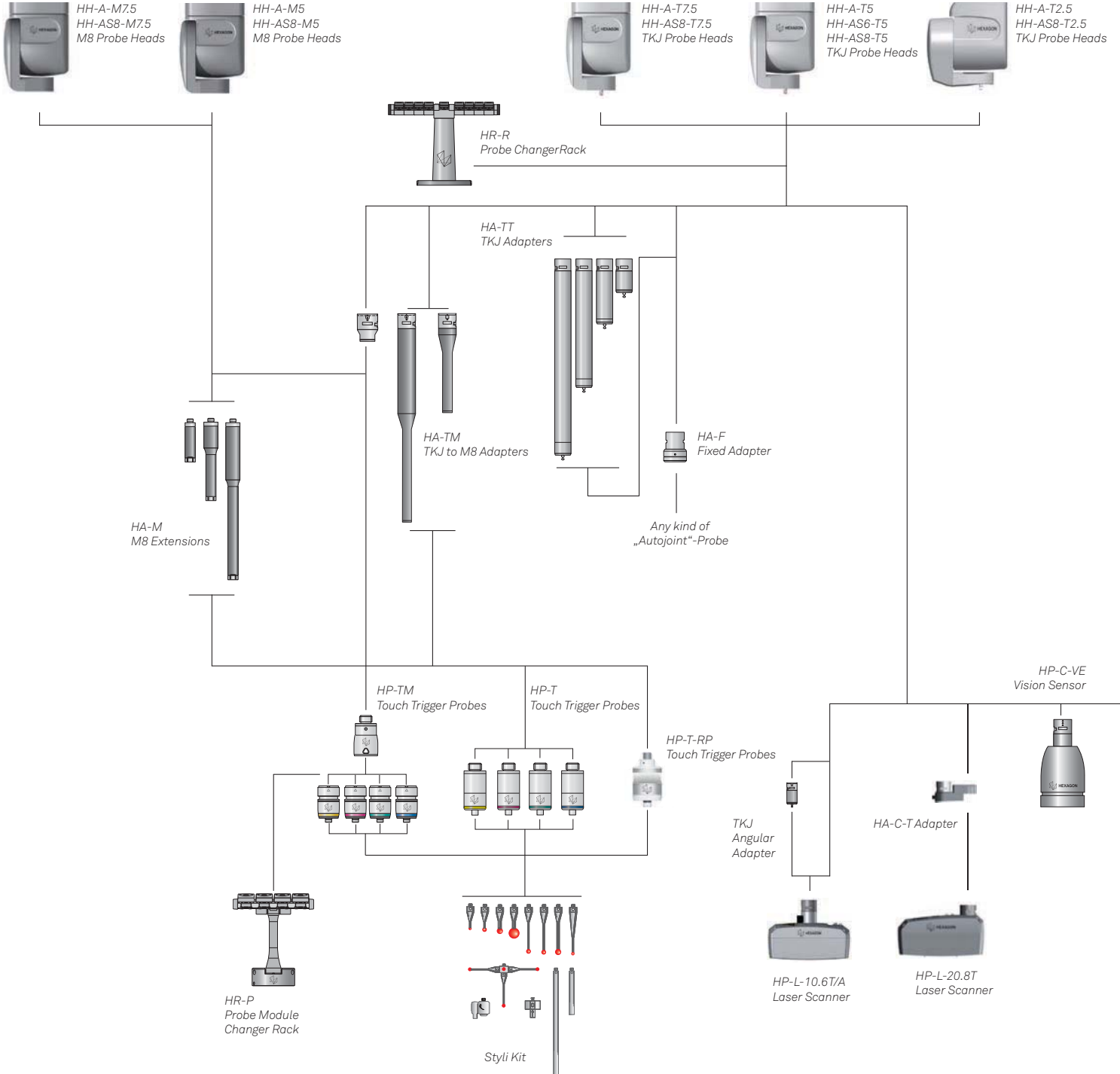
**HH-T | HH-MI  
PROBE HEADS**

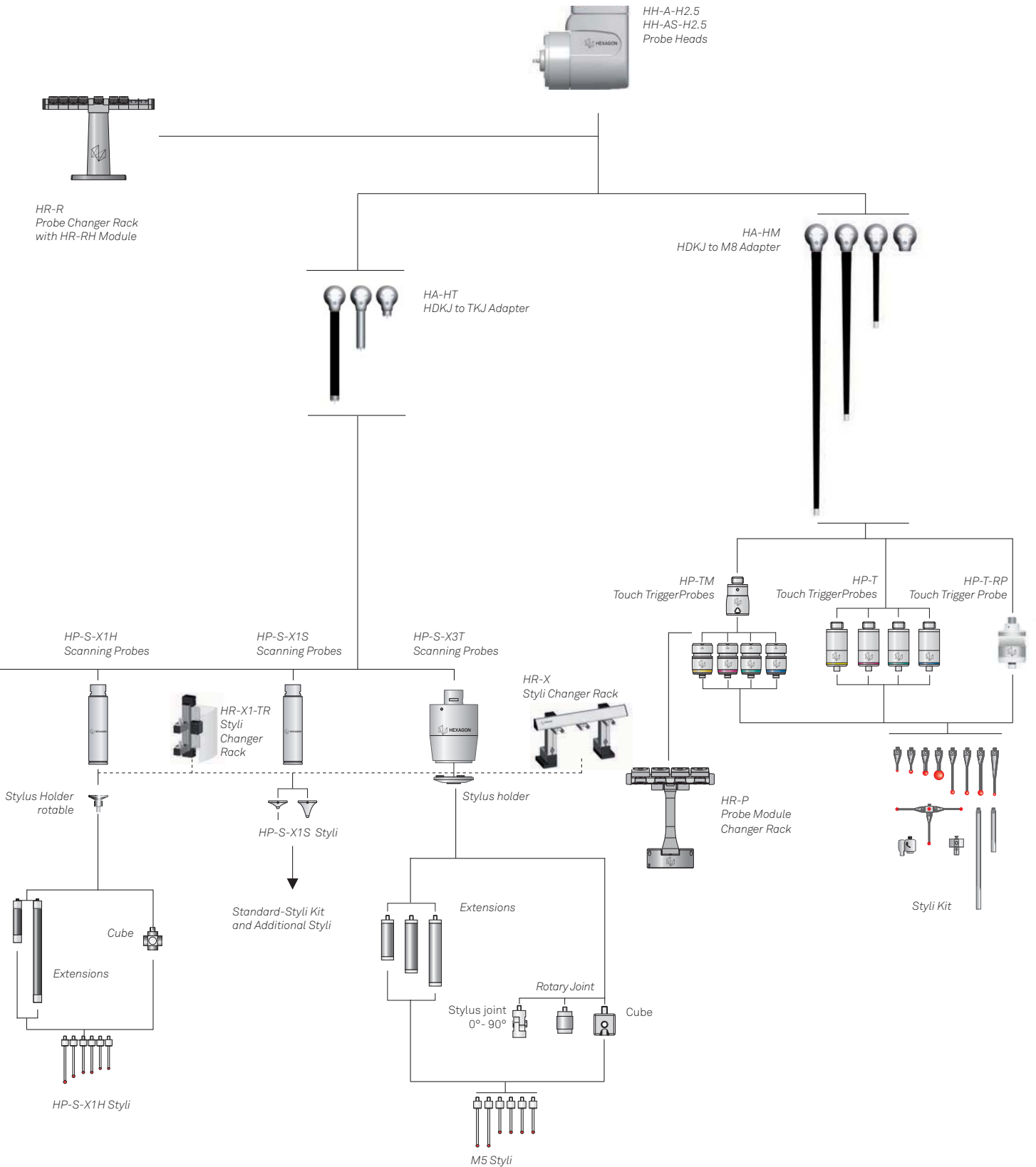


**HH-MI-M  
PROBE HEAD**



HH-A | HH-AS PROBE HEADS

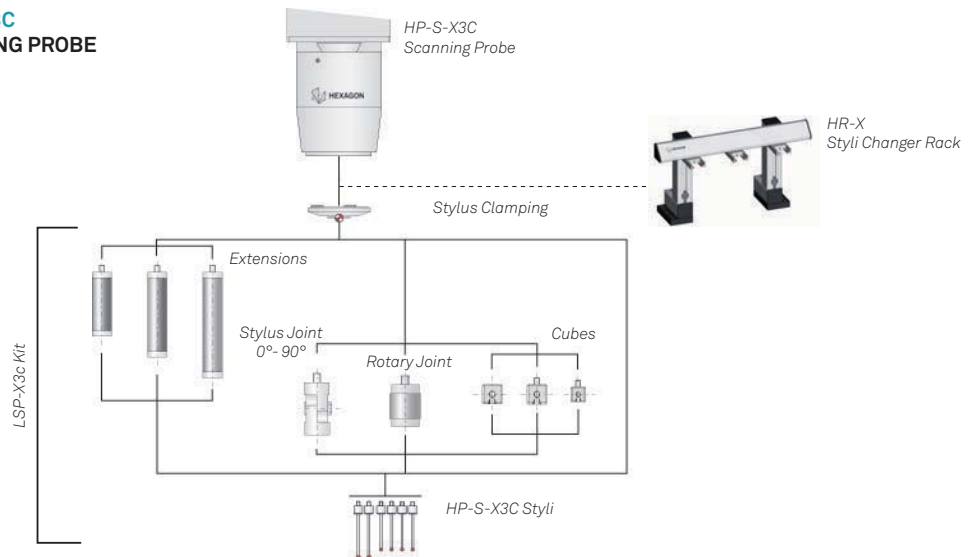




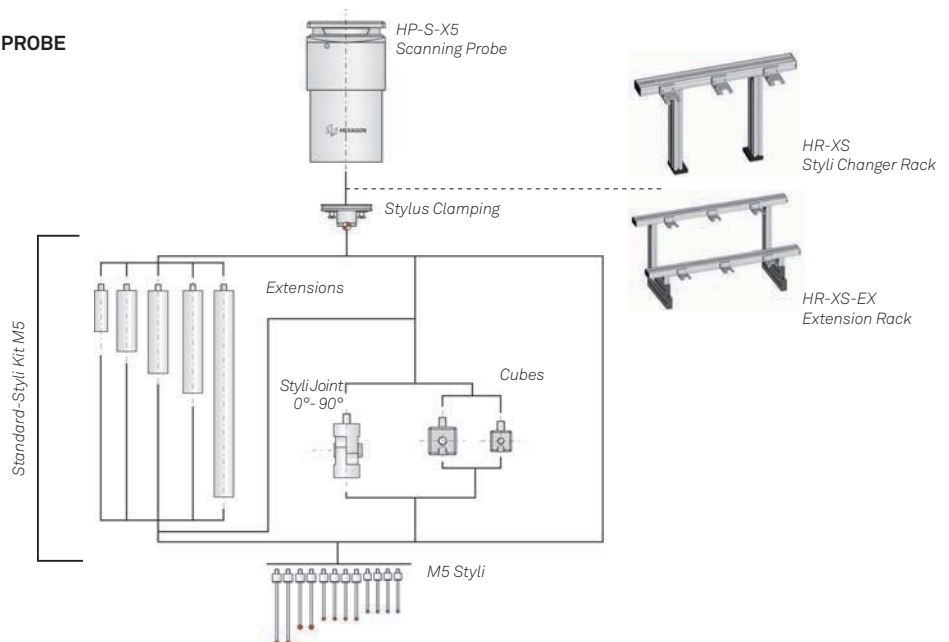
**HP-S-X1C  
SCANNING PROBE**



**HP-S-X3C  
SCANNING PROBE**

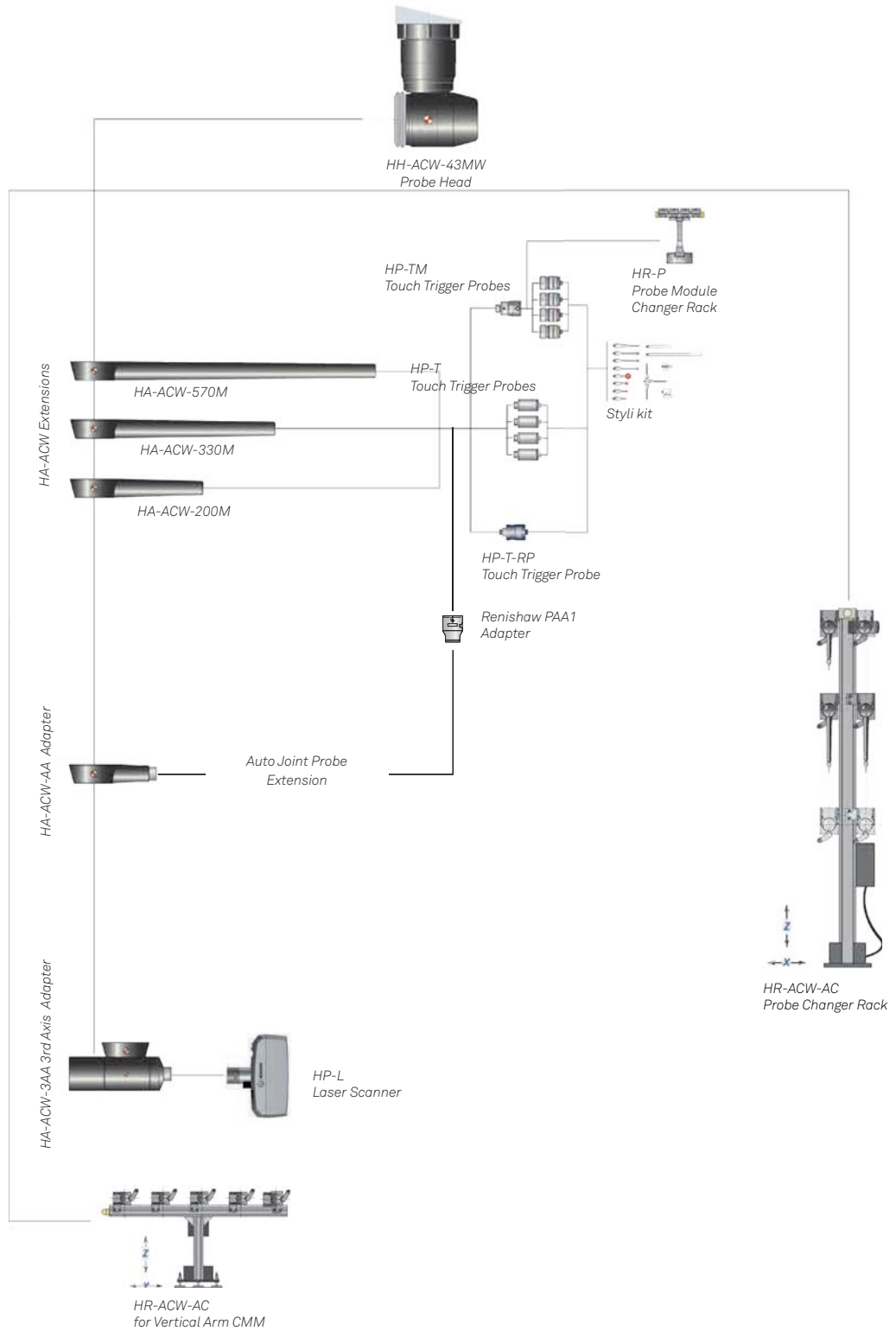


**HP-S-X5  
SCANNING PROBE**





**HH-ACW-43MW**  
**CONTINUOUS PROBE HEAD**





**MANUAL PROBE HEADS**

**AUTOMATIC PROBE 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  
HH-T (D5P - Ø 9.5 mm)

Part No.  
03939020

| Technical Characteristics              |                           |
|--|---------------------------|
| HH-T Probe repeatability 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: HH-MI (D5P - Ø 9.5 mm) Part No.: 03939030

| Technical Characteristics         |  |
|-----------------------------------|--|
| Angular rotation                  | A: 0° – 90°; B: +/- 180°                 |
| Increments                        | 15°                                      |
| Total number of positions         | 168                                      |
| Position repeatability            | 1.5 µm                                   |
| Probe repeatability 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 touch trigger probe and HR-P probe module changer rack to give the flexibility of an automatic stylus change without the need for requalification.

Article: HH-MI-M (D5P - Ø 9.5 mm) Part No.: 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                 |
| 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 page 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 probe 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 rack) without the need for requalification. The probe head is capable of indexing in 7.5° increments and can achieve 720 unique positions.



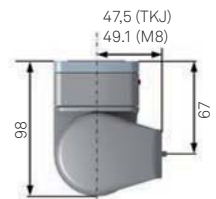
**HH-A-M7.5 M8 7.5° AUTOMATIC PROBE HEAD**

The HH-A-M7.5 is a motorised indexable probe head featuring high speed operation & high rotational torque. The probe 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 touch trigger probe and HR-P probe module changer rack to give the flexibility of an automatic stylus change without the need for requalification. The probe head is capable of indexing in 7.5° increments and can achieve 720 unique positions.



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

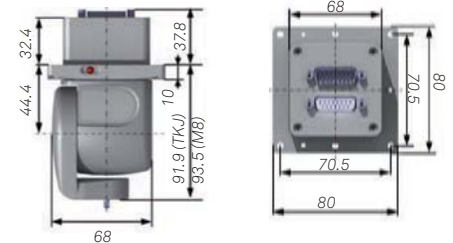
The HH-AS8-T7.5 is a ram mounted version of the HH-A-T7.5 detailed above. The HH-AS8-T7.5 can be fitted directly to any Hexagon Manufacturing Intelligence measuring machine that is fitted with an 80mm ram.



**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 Manufacturing Intelligence 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-AS8T7.5  | HH-AS8-M7.5            | HH-A-T7.5                | HH-A-M7.5              |
|------------------------------|---|------------------------|--------------------------|------------------------|
|                              | TKJ 7.5° 80mm   | M8 7.5° 80mm           | TKJ 7.5°                 | 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                       | 900 g   |                        | 800 g                    |                        |
| Extension                    | Max. Length 300 mm                                    |                        |                          |                        |
| Head mounting                | Direct to Ram   |                        | Shank/Flange to suit CMM |                        |
| Probe mounting               | TKJ<br>(Multiwire)                                    | M8 Thread<br>(2 wires) | TKJ<br>(Multiwire)       | M8 Thread<br>(2 wires) |
| Head controller              | HH-C-V2.0 / HH-CA-V2.0 (with HR-R probe changer rack) |                        |                          |                        |

Automatic 7.5° Probe Heads



**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 probe 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 rack) 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 probe 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 touch trigger probe and HR-P probe module changer rack to give the flexibility of an automatic stylus change without the need for requalification. The probe head is capable of indexing in 5° increments and can achieve 3024 unique positions.



**HH-AS-T5 AUTOMATIC TKJ PROBE HEAD**

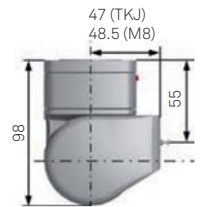
The HH-AS-T5 is a ram mounted version of the HH-A-T5 detailed above.

The HH-AS-T5 can be fitted directly to any Hexagon Manufacturing Intelligence measuring machine that is fitted with an 80mm ram or any Hexagon 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 measuring machine that is fitted with an 80mm ram or any Hexagon 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 |

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.

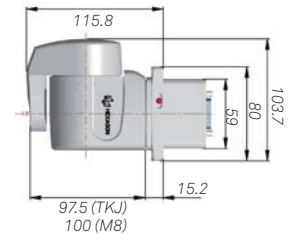
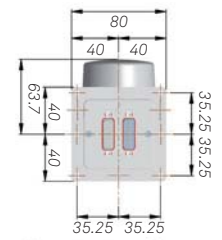
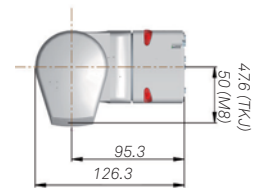
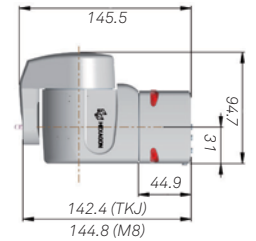
| Technical Characteristics | HH-AS6-T5<br>TKJ 5°          | HH-AS6-M5<br>M8 5°                                    | HH-AS8-T5<br>TKJ 5°                                 | HH-AS8-M5<br>M8 5° | HH-A-T5<br>M8 5°       | HH-A-M5<br>M8 5°   |                          |
|---------------------------|------------------------------|---|---|--------------------|------------------------|--------------------|--------------------------|
| Automatic 5° Probe Heads  | 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                       |   | 880 g   | 900g               |                        | 780 g              |                          |
|                           | Head mounting                |   | Direct to Ram 65 mm                                 |                    | Direct to Ram 80 mm    |                    | Shank/Flange to suit CMM |
| Probe mounting            |                              | TKJ<br>(Multiwire)                                    | M8 Thread<br>(2 wires)                              | TKJ<br>(Multiwire) | M8 Thread<br>(2 wires) | TKJ<br>(Multiwire) | M8 Thread<br>(2 wires)   |
| Head controller           |                              | HH-C-V2.0 / HH-CA-V2.0 (with HR-R probe changer rack) |   |                    |                        |                    |                          |



**HH-A-T2.5 AUTOMATIC TKJ PROBE HEAD**

The HH-A-T2.5 is a motorised probe head in the Hexagon Manufacturing Intelligence Sensor line; the probe 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 probe 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 rack) without the need for requalification. The probe head is capable of indexing in 2.5° increments and can achieve 12,240 unique positions.



**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 Manufacturing Intelligence measuring machine that is fitted with an 80mm ram.

**Article**

HH-A-T2.5 (TKJ)

HH-AS8-T2.5 (TKJ / 80 mm ram)

**Part No.**

03939420

03939422

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

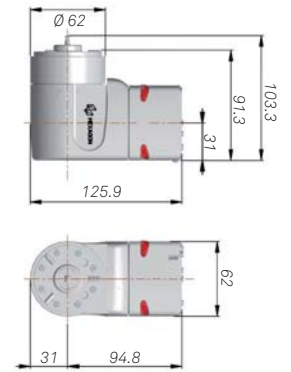
|                            | Technical Characteristics                             | HH-A-T2.5 TKJ 2.5°                                  | HH-AS8-T2.5 TKJ 2.5° |
|----------------------------|---|---|----------------------|
| Automatic 2.5° Probe Heads | Indexing Angle  | 2.5°  |                      |
|                            | 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 probe changer rack) |   |                      |



**HH-A-H2.5 AUTOMATIC HDKJ PROBE HEAD**

The HH-A-H2.5 is the latest motorised probe head in the Hexagon Manufacturing Intelligence 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 probe 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 scanning probes can be supported further from the axis of rotation than with conventional heads due to the combination of extreme rotational torque and the HDKJ adapter.

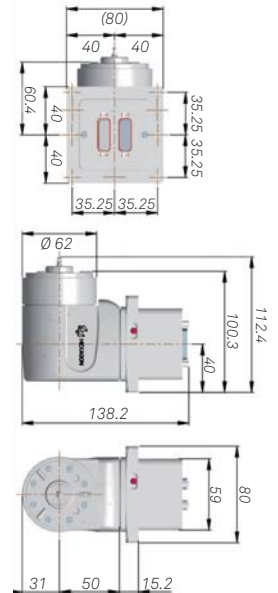
The HDKJ can be changed either manually without the need for requalification or automatically with the HR-R probe changer rack fitted with the optional HR-RH Heavy Duty Module. The probe head is capable of indexing in 2.5° increments and can achieve 20,736 unique positions.



**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 Manufacturing Intelligence 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-H2.5 HDKJ 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 Length     | 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 probe changer rack) |                       |

Automatic 2.5 HDKJ Probe Heads



**HH-ACW-43MW CONTINUOUS PROBE HEAD**

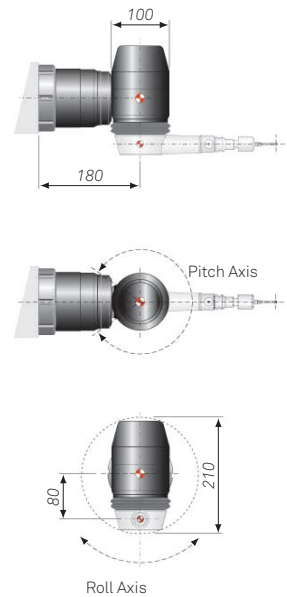
The HH-ACW-43MW multi-axis continuous probe head allows the fast and accurate orientation of probes in any probing direction in space. The continuous positioning of rotary axes (virtually unliwithed angular positions), along with the possibility to handle standard extensions with total length up to 600 mm from the centre of rotation allows full access to the part to be measured. The exclusive probe changer rack 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 styli/probe changer racks 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  
HH-ACW-43MW

Part No.  
G30481300

| Technical Characteristics |   |                          |        |
|---------------------------|---|--------------------------|--------|
|                           | Roll Axis   | Pitch Axis               |        |
| HH-ACW-43MW               | Description                                       |                          |        |
|                           | Useful angular stroke                             | ± 180°                   | ± 170° |
|                           | Rotation speed                                    | 1 rad/s                  |        |
|                           | Acceleration                                      | 10 rad/s <sup>2</sup>    |        |
|                           | Acceleration                                      | 0.14 arc <sup>ll</sup>   |        |
|                           | Positioning repeatability                         | 1 x 10 <sup>-5</sup> rad |        |
|                           | Weight  | 3.5 kg                   |        |
|                           | Max. tool weight                                  | 1.5 kg                   |        |
|                           | Max. applied torque                               | 2 Nm                     |        |
|                           | Adapters  | HA-ACW-AA<br>HA-ACW-3AA  |        |
| Extensions                | E200-mw, E330-mw, E570-mw<br>HP-T-RP, HP-T, HP-TM |                          |        |
| Probes                    | Compatible with other sensors on the market       |                          |        |
| Changer racks             | HR-ACW-AC, HR-P                                   |                          |        |







**HP-T TOUCH TRIGGER PROBE**

The HP-T touch trigger 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 touch trigger probe is fitted with a M8 threaded connection.

| Article                     | Part No. | Article                       | Part No. |
|-----------------------------|----------|-------------------------------|----------|
| <b>HP-T-LF</b> Low Force    | 03939070 | <b>HP-T-SF</b> Standard Force | 03939071 |
| <b>HP-T-MF</b> Medium Force | 03939072 | <b>HP-T-EF</b> Extended Force | 03939073 |

| Technical Characteristics |                               |                            |                      |                                    |
|---------------------------|-------------------------------|----------------------------|----------------------|------------------------------------|
| <b>HP-T</b>               | Measuring 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                      |                      |                                    |
|                           |                               | <i>Pre Travel Variance</i> | <i>Trigger force</i> | <i>Repeatability 1D (2 Sigma)*</i> |
|                           | <b>HP-T-LF</b> Low Force      | ± 0.6 µm                   | 0.055 N at 10 mm     | <0.35 µm                           |
|                           | <b>HP-T-SF</b> Standard Force | ± 0.8 µm                   | 0.08 N at 10 mm      | <0.35 µm                           |
|                           | <b>HP-T-MF</b> Medium Force   | ± 1.00 µm                  | 0.10 N at 25 mm      | <0.5 µm                            |
|                           | <b>HP-T-EF</b> Extended Force | ± 2.00 µm                  | 0,10 N at 50 mm      | <0.65 µm                           |



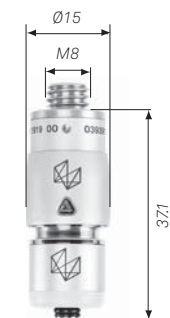
**HP-TM TOUCH TRIGGER PROBE**

The HP-TM 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 module 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.

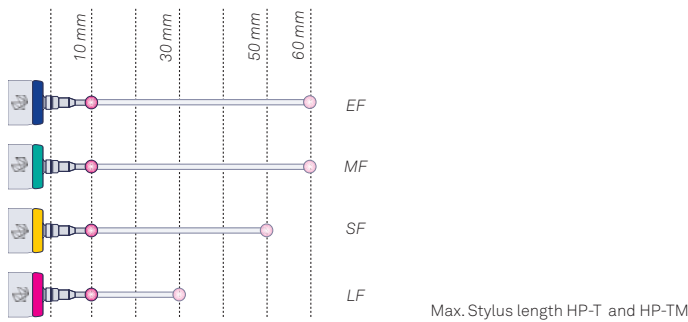
| Article                      | PartNo.  | Article                        | PartNo.  |
|------------------------------|----------|--------------------------------|----------|
| <b>HP-TM-LF</b> Low Force    | 03939170 | <b>HP-TM-SF</b> Standard Force | 03939171 |
| <b>HP-TM-MF</b> Medium Force | 03939172 | <b>HP-TM-EF</b> Extended Force | 03939173 |
| <b>HP-TB</b> Body            | 03939174 |                                |          |

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

| Technical Characteristics |                                |                            |                      |                                   |
|---------------------------|--------------------------------|----------------------------|----------------------|-----------------------------------|
| <b>HP-TM</b>              | Measuring direction            | +/- X, +/- Y, +Z           |                      |                                   |
|                           | Probe mounting                 | M8                         |                      |                                   |
|                           | Stylus mounting                | M2                         |                      |                                   |
|                           | Over travel                    | X/Y: ± 16°, Z: 5mm         |                      |                                   |
|                           | Maximum Styli length           | See diagram page 18        |                      |                                   |
|                           | Module weight                  | 11g                        |                      |                                   |
|                           |                                | <i>Pre Travel Variance</i> | <i>Trigger force</i> | <i>Repeatability 1D (2 Sigma)</i> |
|                           | <b>HP-TM-LF</b> Low Force      | ± 0.6 µm                   | 0,055 N at 10 mm     | <0.35 µm                          |
|                           | <b>HP-TM-SF</b> Standard Force | ± 0.8 µm                   | 0,08 N at 10 mm      | <0.35 µm                          |
|                           | <b>HP-TM-MF</b> Medium Force   | ± 1.00 µm                  | 0,10 N at 25 mm      | <0.5 µm                           |
|                           | <b>HP-TM-EF</b> Extended Force | ± 2.00 µm                  | 0,10 N at 50 mm      | <0.65 µm                          |



|                               | Kit 1    | Kit 2    | Kit 3    | Kit 4    | Kit 5    | Kit 6    | Kit 7    | Kit 8    | Kit 9    | Kit 10   | Kit 11   |
|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Contents of HP-TM Kits</b> | 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.    |
| HP-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.    |



**HP-T-RP TOUCH TRIGGER ROBE**

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 Manufacturing Intelligence 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  
HP-T-RP

Part No.  
03939350

| Technical Characteristics |                            |   |
|---------------------------|----------------------------|---|
| <b>HP-T-RP</b>            | 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) |
|                           | 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. It uses the same technology as the other scanning probes of the HP-S series (X3-X5) and 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 probes, 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 on the HR-R probe changer rack. Magnetic stylus holders allow fast and repeatable stylus change using the HP-S-X1S styli changer rack or the 3 port unit for HR-R probe changer rack.

#### Article

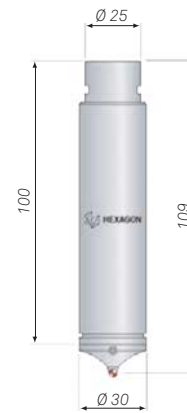
HP-S-X1S

#### Part No.

M00-114-006-000

#### Technical Characteristics

| HP-S-X1S | Technical Characteristics |                              |
|----------|---------------------------|------------------------------|
|          | Probe 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 length range  | Up to 115 mm                 |



### HP-S-X1H SCANNING PROBE

HP-S-X1H is a high accuracy 3D scanning probe. 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 probes, the HP-S-X1H provides simultaneous and unclamped probing in all axes, always orthogonal to the contact surface.

#### Article

HP-S-X1H

#### Part No.

M00-114-008-000

#### Technical Characteristics

| HP-S-X1H | Technical Characteristics |   |
|----------|---------------------------|---|
|          | Probe 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 length range  | Vertical: Up to 225 mm<br>Horizontal: Up to 50 mm |





**HP-S-X1C 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 probes, the HP-S-X1C provides simultaneous and unclamped probing in all axes, always orthogonal to the contact surface.

Article  
HP-S-X1C

Part No.  
M00-114-009-000

| Technical Characteristics |                          |   |
|---------------------------|--------------------------|---|
| HP-S-X1C                  | Probe 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<br>Horizontal: Up to 50 mm |



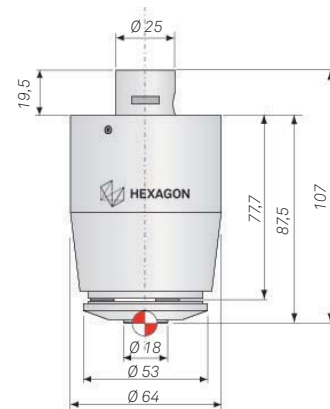
**HP-S-X3T SCANNING PROBE**

The HP-S-X3T is an extremely accurate 3D scanning probe. 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 automatic 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 styli changer rack.

Article  
HP-S-X3T

Part No.  
M00-114-004-000

| Technical Characteristics |                    |                               |
|---------------------------|--------------------|-------------------------------|
| HP-S-X3T                  | Probe 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 /360mm*                |



\* in combination with HH-A-H2.5 - otherwise 150mm

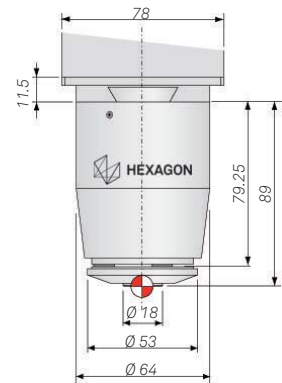


**HP-S-X3C SCANNING PROBE**

The HP-S-X3C fixed scanning probe 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 **HP-S-X3C** Part No. **M00-114-003-000**

| Technical Characteristics |                    |                               |
|---------------------------|--------------------|-------------------------------|
| HP-S-X3C                  | Probe 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   | 5 N/mm                        |
|                           | Stylus joint       | M5                            |
|                           | Max. stylus weight | 150 g (Incl. stylus clamping) |
|                           | Max. stylus length | Up to 360 mm                  |

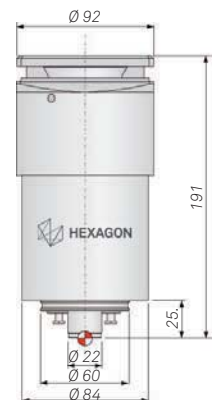


**HP-S-X5 SCANNING PROBE**

HP-S-X5 is a fixed scanning probe for analogue probing. This heavy-duty scanning probe features an effective anti-collision system. HP-S-X5 has a dovetail connection allowing fast and easy change of the probe 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 automatically.

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

| Technical Characteristics             | HP-S-X5                 | HP-S-X5HD*                    |                               |
|---------------------------------------|-------------------------|-------------------------------|-------------------------------|
| HP-S-X5 / HP-S-X5HD                   | Probe 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 for HP-S-X5

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



HP-L-10.6T / HP-L-10.6A



HP-L-20.8T incl. Adapter

**HP-L LASER SCANNER**

HP-L laser scanners deliver maximum performance for complex surfaces and workpieces made of materials that are difficult to measure. These flexible laser scanners record precisely even at the highest speeds. Among the main applications: Checking the characteristics of thin-walled components, sheet metal parts, measuring freeform surfaces and reverse engineering.

- the line width can be varied as needed from 24 mm to 124 mm (HP-L-10.6) and up to 220 mm (HP-L-20.8)
- automatic, real-time laser power adjustment

Thanks to its TKJ adapter, the HP-L-10.6T can be used in almost all Hexagon Manufacturing Intelligence coordinate measuring machines (CMMs) with the greatest precision. The HP-L-10.6A can be used on a CMM with an AJ adapter. The HP-L-20.8T is primarily offered on a portable Measurement Arm. It can also be used on Hexagon CMMs with an adapter.

**Article**

- HP-L-10.6T Laser Scanner System (TKJ)
- HP-L-10.6A Laser Scanner System (Autojoint)
- HP-L-20.8T Laser Scanner System (TKJ)
- Warming post for HR-R Probe Changer Rack
- Manual warm-up station (TKJ)
- Manual warm-up station (Autojoint)
- Set of 4 TKJ Angular Adapters (to be used only with HP-L10.6)

**Part No.**

- 03939500
- 03939501
- 03939535
- 03939507
- G32438600
- G3243800
- 03969394

To use the Laser Scanner HP-L-20.8T on a stationary CMM the following additional items should be ordered:

- HP-LC-210 Controller (P/N 03939534)
- 1x Power unit 24 VDC with cables (03939505)
- 1x TKJ adapter key (03969357)
- 1x HA-C-T Adapter TKJ for HP-L-20.8T (03939526) or 1x HA-C-A Adapter AJ for HP-L-20.8T (03939527)

|                                   | HP-L-10.6T  | HP-L-10.6A                                       | HP-L-20.8T  |                   |              |
|-----------------------------------|---|--|---|-------------------|--------------|
| <b>HP-L</b>                       | Laser protection class  |  | 2 (IEC 60825-1: 2007)   |                   |              |
|                                   | Laser   |  | Visibly red, (690 nm)   |                   |              |
|                                   | Standoff and depth (Z)  |  | 170 ±30mm   | 180 ± 40mm        |              |
|                                   | Measuring accuracy<br>ISO10360-8:2013<br>(Global CMM except for Global Extra) |  | 30 µm   | 36 µm             |              |
|                                   | • PForm.Sph.D95%:Tr:ODS (MPL)<br>Probe dispersion value                       |  | 20 µm   | 24 µm             |              |
|                                   | • PForm.Sph.1x25:Tr:ODS (MPE)<br>Probing form error                           |  |   |                   |              |
|                                   | Lines per second (max.)   |  | 53 Hz   | 100 Hz            |              |
|                                   | Data rate (max.)  |  | 30 000 pts/sec  | 150 000 pts/sec   |              |
|                                   | Ambient light of the sensor   |  | 40 000 lx   |                   |              |
|                                   | Operating temperature   |  | +5 to +45 °C (41 to 113°F)  |                   |              |
|                                   | Declared accuracy temperature range   |  | +15 to +32 °C (59 to 90°F)  |                   |              |
|                                   | Relative humidity   |  | 90% non condensing  |                   |              |
|                                   | Size L x W x H  |  | 134×72×60 (98) mm   | 134×72×60 (87) mm | 137×76×85 mm |
|                                   | Weight  |  | 379 g   | 360 g             | 410 g        |
|                                   | Power supply  |  | DC 18 to 28 V, 170 to 200 mA, protected against polarity reversal |                   |              |
| Protection against dust and water |   | IP64 (IEC 60529) (except for warm-up connection) |   |                   |              |
| Storage temperature               |   | -25 to +70 °C (-13 to 158°F)                     |   |                   |              |

**Hardware compatibility\***

- GANTRY CMMs
- BRIDGE CMMs
- HORIZONTAL ARM CMMs

\*For further details, please see individual machine data-sheet



VISIBLE AND INVISIBLE LASER RADIATION:  
DO NOT LOOK INTO THE BEAM  
**CLASS 2 LASER PRODUCT**  
620-690 nm / 1 mW cw  
1500-1600 nm / 10 mW max.  
applied standard: IEC 60825-1 (2007-03)



**HP-C-VE VISION SENSOR**

HP-C-VE vision sensors 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 sensors are very versatile and have many potential applications for the CMM user. Due to their general-purpose nature HP-C-VE sensors 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 HR-R probe changer rack. 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  
HP-C-VE complete set

Part No.  
CMMV-et

| Technical Characteristics |                             |  |
|---------------------------|-----------------------------|--|
| HP-C-VE                   | Field of View (FOV)         | Approx. 6 mm x 5 mm (on the workpiece being inspected) Area: > 35 mm <sup>2</sup>  |
|                           | Optical Magnification       | The image at the CCD is 75% of the FOV (on the workpiece)  |
|                           | Object to sensor stand -off | 75 mm  |
| <i>LED-illuminator</i>    |                             |  |
|                           | 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<br>Intensity of both rings can be adjusted independently                                    |





**HR-ACW-AC PROBE CHANGER RACK**

The HR-ACW-AC probe 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 changer rack allows the configuration of a variable number of stations.

**Article**

Changer rack for horizontal arm CMM:  
**Stand of HR-ACW-AC**  
**Station for HH-ACW-43MW Adapter & Extensions**  
**Station for HH-ACW-3AA Adapter with warmup-function**

**Part No.**

G32631100  
 G32631200  
 G32632000

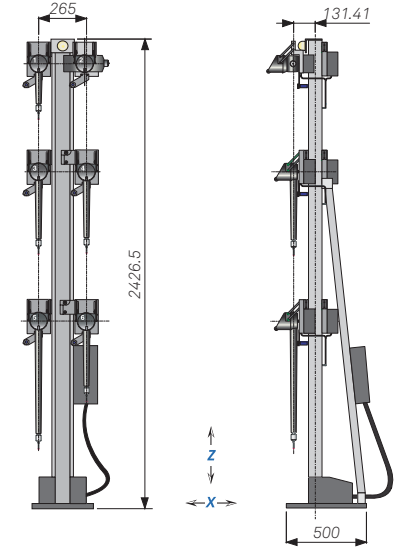
Tool changer for vertical arm CMM:

**Stand of HR-ACW-AC**  
**Station for HR-ACW-43MW Adapter & Extensions**

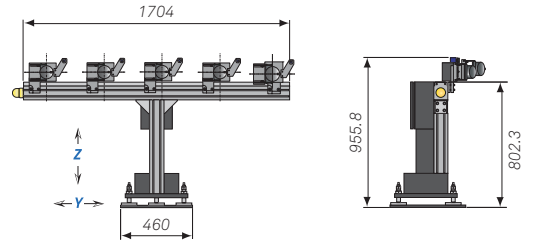
G32632900  
 G32633000

**Technical Characteristics**

|  |  |  |
|--|--|--|
| <b>HR-ACW-AC</b>   | No. of positions   | Max. 8 for HR-ACW-AC for Horizontal arm-CMM<br>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<br>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 PROBE MODULE CHANGER RACK**

The HR-P is a passive probe module changer rack; 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 probe changer rack to enable the changing of modules without the need of an extra rack on the system.



**Article**

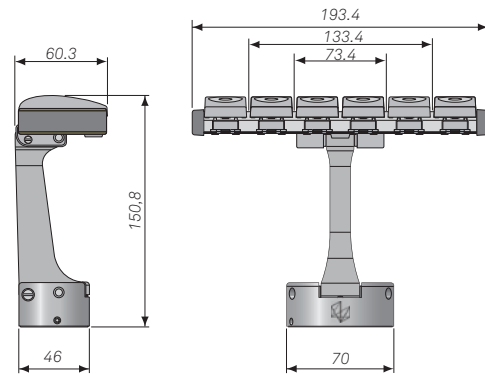
HR-P2 (2 ports)  
 HR-P4 (4 ports)  
 HR-P6 (6 ports)  
 HR-PA-2 Additional 2 ports

**Part No. (150 mm)**

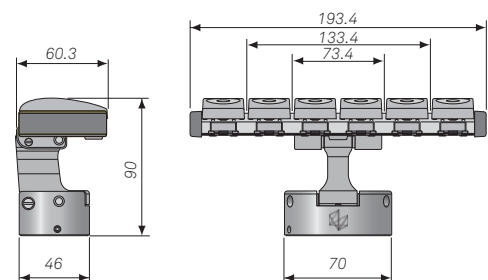
03939180  
 03939181  
 03939182  
 03939190

**Part No. (90 mm)**

03939185  
 03939186  
 03939187  
 03939190



HR-P with 2, 4 and 6 ports



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





**HR-R PROBE CHANGER RACK**

The HR-R is an automatic probe changer rack that uses Hexagon Manufacturing Intelligence'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**

- HR-R3 (3 Ports and Adjustable feet)
- HR-R5 (5 Ports and Adjustable feet)
- HR-R9 (9 Ports and Adjustable feet)
- Rising block (100 mm)
- Rising block (500mm)
- Adjustable feet
- HR-RP-2 2 add. ports
- HR-RA-40 Additional active port 40 mm
- HR-RA-65 Additional active port 65 mm (for HP-C-VE, HP-L, HP-S-X3T)
- HR-RH Modul for HA-HT and HA-HM Adapter

**Part No.**

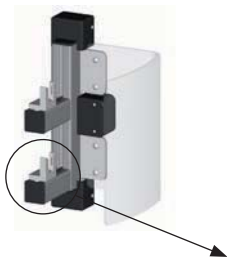
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- 03939111
- 03939112
- 03969370
- 03969371
- 052901
- 03939192
- 03939091
- 03939092
- 03939093



**HR-X1-TR STYLI CHANGER RACK FOR SCANNING PROBES HP-S-X1H/S**

The HR-X1-TR is attached vertically on the guide support of the machine and moves with the moving portal of the machine. The cycle time can be reduced significantly with this vertical rack. The measurement volume remains unchanged in comparison to a styli changer rack fixed to the base of the machine. The HR-X1-TR can be used together with the HP-S-X1S or HP-S-X1H scanning probes. The HR-X1-TR is available with different sizes of magazine strips.

| Article                          | PartNo.          | z-axis          | max. Ports |
|----------------------------------|------------------|-----------------|------------|
| HR-X1-TR                         | M00-398-201-000  | 300             | 2          |
| HR-X1-TR                         | M00-295-201-000  | 600             | 4          |
|                                  | M00-304-201-000  | 700             | 4          |
|                                  | M00-304-201-000  | 900             | 5          |
|                                  | Styli receptacle | M00-304-201-200 |            |
| Styli receptacle for machine 543 | M00-398-201-200  |                 |            |



M00-304-201-200  
M00-398-201-200



**HR-X STYLI CHANGER RACK HR-X FOR SCANNING PROBES HP-S-X1C/H/S AND HP-S-X3C/T**

The styli changer rack HR-X allows a quick change of styli configurations within a measuring program. Depending on the size of the coordinate measuring machine and the type of the scanning probe. In the various sizes the styli changer rack HR-X is suitable for Hexagon Manufacturing Intelligence Reference and Global coordinate measuring machines. Depending on the scanning probe and the ambient conditions, there are different ports for the styli changer rack HR-X.

| Size CMM | Sensor | HP-S-X1H                               | HP-S-X1C                               | HP-S-X3C                               |
|----------|--------|--|--|--|
|          |        | HP-S-X1S                               |  | HP-S-X3T                               |
| HR-X     | 5.4.3  | M00-1087-010-000                       | M00-1087-012-000<br>(M00-1087-010-000) | M00-1087-012-000                       |
|          | 7.5.5  | M00-1087-015-000                       | M00-1087-015-000                       | M00-1087-015-000                       |
|          | 7.7.5  | M00-1087-020-000<br>(M00-1087-022-000) | M00-1087-020-000<br>(M00-1087-022-000) | M00-1087-022-000<br>(M00-1087-020-000) |
|          | 10.7.6 | M00-1087-020-000<br>(M00-1087-022-000) | M00-1087-020-000<br>(M00-1087-022-000) | M00-1087-022-000<br>(M00-1087-020-000) |
|          | 15.9.7 | M00-1087-030-000<br>(M00-1087-032-000) | M00-1087-030-000<br>(M00-1087-032-000) | M00-1087-032-000<br>(M00-1087-030-000) |
|          | 20.9.7 | M00-1087-035-000<br>(M00-1087-037-000) | M00-1087-035-000<br>(M00-1087-037-000) | M00-1087-037-000<br>(M00-1087-035-000) |
| xx.12.10 |        | M00-1087-040-000                       | M00-1087-040-000                       | M00-1087-040-000                       |

Figures in brackets represent an alternatively selectable stylus rack

Please consider styli changer ports or stylus clamping/holders are not included in any styli changer rack and have to be ordered additionally

**HR-X STYLI CHANGER RACK PORTS**

Depending on the scanning probe and the ambient conditions, there are different ports for the styli changer rack HR-X.



M00-114-113-000



M00-114-167-000



M00-114-213-000



M00-114-109-000

| Scanning Probe          | max. Styli changer ports |                  |        |                  |                            |                         |                  |
|-------------------------|--------------------------|------------------|--------|------------------|----------------------------|-------------------------|------------------|
|                         | HP-S-X1   HP-S-X3        | HR-X1-P          |        | HR-X1-P-SF       | HR-X1-3P                   | HR-X3-P                 |                  |
| HR-X changer rack ports | Part Number              | Dimensions in mm |        | Styli receptacle | Styli receptacle Shopfloor | Styli receptacle Triple | Styli receptacle |
|                         |                          | Width            | Height | M00-114-113-000  | M00-114-167-000            | M00-114-213-000         | M00-114-109-000  |
|                         | M00-1087-010-000         | 400              | 195    | 9                | 9                          | 3                       | -                |
|                         | M00-1087-012-000         | 400              | 295    | 9                | 9                          | 3                       | 6                |
|                         | M00-1087-015-000         | 400              | 295    | 9                | 9                          | 3                       | 5                |
|                         | M00-1087-020-000         | 700              | 295    | 17               | 17                         | 5                       | 9                |
|                         | M00-1087-022-000         | 700              | 395    | 17               | 17                         | 5                       | 9                |
|                         | M00-1087-020-000         | 700              | 295    | 17               | 17                         | 5                       | 9                |
|                         | M00-1087-022-000         | 700              | 395    | 17               | 17                         | 5                       | 9                |
|                         | M00-1087-030-000         | 900              | 295    | 22               | 22                         | 7                       | 12               |
|                         | M00-1087-032-000         | 900              | 395    | 22               | 22                         | 7                       | 12               |
|                         | M00-1087-035-000         | 900              | 295    | 22               | 22                         | 7                       | 12               |
|                         | M00-1087-037-000         | 900              | 395    | 22               | 22                         | 7                       | 12               |
|                         | M00-1087-040-000         | 1200             | 395    | 29               | 29                         | 9                       | 17               |



Main Rack HR-XS

**HR-XS STYLI CHANGER RACK FOR SCANNING PROBE HP-S-X5**

Reference / Global CMMs

The styli changer rack HR-XS allows a quick change of styli configurations within a measuring program. In the various sizes the styli changer rack HR-XS is suitable for Hexagon Manufacturing Intelligence Reference and Global coordinate measuring machines (depending on the size of the CMM).

**HR-XS-EX EXTENSION RACK FOR SCANNING PROBE HP-S-X5**

Reference / Global CMMs

The requirement for the use of the extension rack is an already installed styli changer rack HR-XS.

Reference / Global CMMs

| Size CMM         | Probe    | HP-S-X5          | HP-S-X5            |
|------------------|----------|------------------|--------------------|
|                  |          | Main Rack HR-XS  | Extension HR-XS-EX |
| XR-XS / HR-XS-EX | 10.76    | M00-1087-110-000 | M00-1087-115-000   |
|                  | 15.9.7   | M00-1087-120-000 | M00-1087-125-000   |
|                  | 20.9.7   | M00-1087-130-000 | M00-1087-135-000   |
|                  | xx.12.10 | M00-1087-140-000 | M00-1087-145-000   |



Extension Rack HR-XS-EX

Please consider styli changer ports or stylus clamping/holders are not included in any styli changer rack and have to be ordered additionally

**HR-XS STYLI CHANGER RACK PORTS**

Depending on scanning probe and position of the styli changer rack, different styli ports can be used for the HR-XS styli changer rack.

Article PartNo.

- HR-XS-P** Styli changer ports (standard) M00-153-285-000
- HR-XS-P-X** Styli changer ports M00-153-286-000



M00-153-285-000



M00-153-286-000

|                                | Scanning Probe   |                                  | max. styli changer ports                 |  |
|--------------------------------|------------------|----------------------------------|--|--|
|                                | HP-S-X5          |                                  | HR-XS-P                                  | HR-XS-P-X                                |
| XR-XS / HR-XS-EX changer ports | Part Number      | Dimensions in mm<br>Width Height | Styli receptacle in Y<br>M00-153-285-000 | Styli receptacle in X<br>M00-153-286-000 |
|                                | M00-1087-110-000 | 700 415                          | 8  | 6  |
|                                | M00-1087-115-000 | 700 155                          | 8  | -  |
|                                | M00-1087-120-000 | 900 515                          | 11                                       | 8  |
|                                | M00-1087-125-000 | 900 155                          | 11                                       | -  |
|                                | M00-1087-130-000 | 900 515                          | 11                                       | 8  |
|                                | M00-1087-135-000 | 900 155                          | 11                                       | -  |
|                                | M00-1087-140-000 | 1200 515                         | 14                                       | 10                                       |
|                                | M00-1087-040-000 | 1200 155                         | 14                                       | -  |

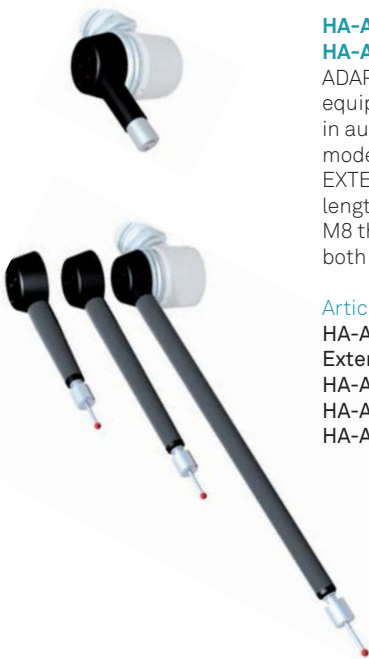
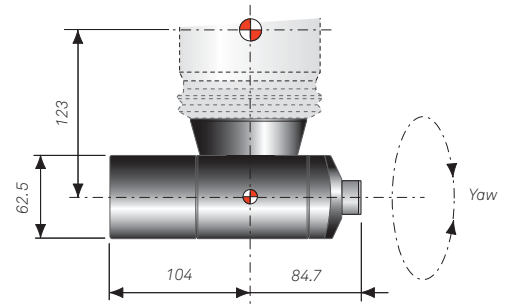


**HA-ACW-3AA 3RD AXIS ADAPTER**

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 rack.

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

| Technical Characteristics |            |
|---------------------------|------------|
| Useful angular stroke     | ± 180°     |
| Rotation speed            | 1 rad/s    |
| Acceleration              | 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  |
| Probe Changer Rack        | HR-ACW-AO  |

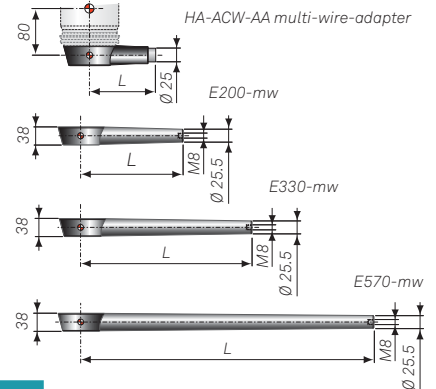


**HA-ACW-AA ADAPTER  
HA-ACW200M/330M/570M EXTENSIONS**

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



| Description       | Material                         | L (mm) | Weight (g) |
|-------------------|----------------------------------|--------|------------|
| <i>Adapter</i>    |                                  |        |            |
| HA-ACW-AA         | Aluminium alloy and carbon fibre | 129.5  | 500        |
| <i>Extensions</i> |                                  |        |            |
| 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        |

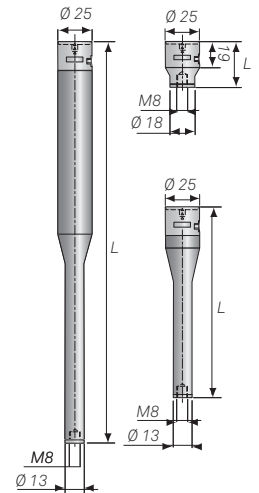


**HA-TM TKJ to M8 ADAPTERS**

The HA-TM adapters, available in four 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 probe changer rack. 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 |
| HA-TM-450C | 450 mm Carbon fibre adapter | 03969368 |

| Description        | Material                       | L (mm) | Weight (g) |
|--------------------|--------------------------------|--------|------------|
| HA-TM-31 adapter   | Aluminium & stainless steel    | 33     | 64         |
| HA-TM-140 adapter  | Aluminium & stainless steel    | 140    | 84         |
| HA-TM-300 adapter  | Aluminium & stainless steel    | 300    | 121        |
| HA-TM-450C adapter | Carbon fibre & stainless steel | 450    | 150        |



**HA-F FIXED ADAPTER**

The HA-F fixed adapter 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 probe changer rack.

| Part No.           |          |
|--------------------|----------|
| HA-F Fixed Adapter | 03969369 |

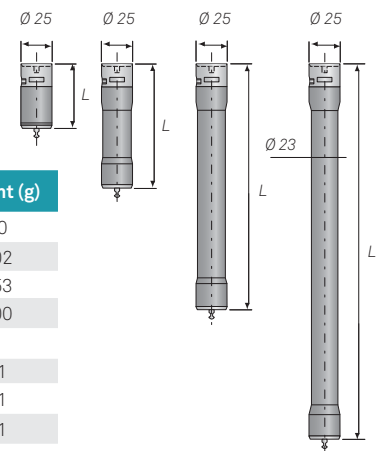
**HA-TT TKJ ADAPTERS**

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 probe changer rack. The extensions allow for the use of long stable probe builds for deep measuring applications. The range also contains 4 angular adapters 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-300C Extension          | 300 mm | 03969364 |
| 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 |

| 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-300C Extension          | Carbon fibre & stainless steel | 302    | -          |
| 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         |



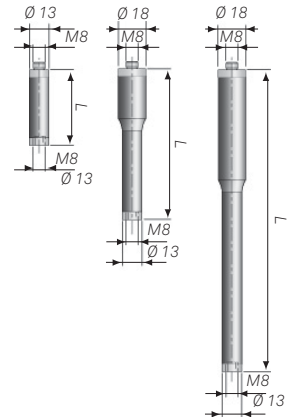


**HA-M M8 EXTENSIONS**

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 heads or accessories. The extension are available in three sizes: 50, 100 and 200mm.

| Article  |                     | Part No. |
|----------|---------------------|----------|
| HA-M Kit | M8/M8 Extension Kit | 03969077 |
| HA-M-50  | M8/M8 50 mm         | 03969065 |
| HA-M-100 | M8/M8 100 mm        | 03969066 |
| HA-M-200 | M8/M8 200 mm        | 03969067 |

| Description                     | Material  | L (mm) | Weight (g) |
|---------------------------------|-----------|--------|------------|
| HA-M Kit M8/M8 Extension 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         |

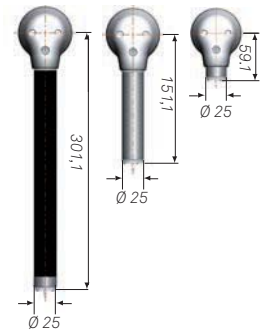


**HA-HT HDKJ TO TKJ ADAPTERS**

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

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

| Description        | Material                       | L (mm) | Weight (g) |
|--------------------|--------------------------------|--------|------------|
| HA-HT-CA Adapter   | Aluminium & stainless steel    | 58     | 170        |
| HA-HT-150 Adapter  | Aluminium & stainless steel    | 150    | 220        |
| HA-HT-300C Adapter | Carbon fibre & stainless steel | 300    | 260        |

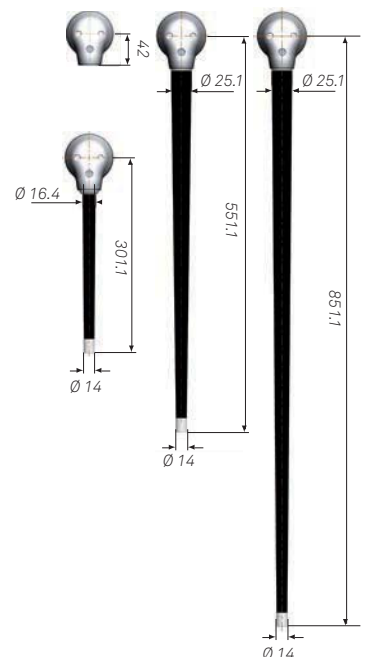


**HA-HM HDKJ TO M8 ADAPTERS**

The HA-HM series is a range of HDKJ to TKJ adapters, 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 rack 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 adapter      | 03969395 |
| HA-HM-250C | 250mm carbon adapter | 03969396 |
| HA-HM-500C | 500mm carbon adapter | 03969397 |
| HA-HM-750C | 750mm carbon adapter | 03969398 |

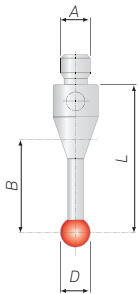
| Description        | Material                       | L (mm) | Weight (g) |
|--------------------|--------------------------------|--------|------------|
| HA-HM-CA Adapter   | Aluminium & stainless steel    | 44,5   | 170        |
| HA-HM-250C Adapter | Carbon fibre & stainless steel | 250    | 200        |
| HA-HM-500C Adapter | Carbon fibre & stainless steel | 500    | 250        |
| HA-HM-750C Adapter | Carbon fibre & stainless steel | 750    | 300        |



**Straight Styli**

Technical Characteristics

| Description                         | Material | Dimensions (mm) |     |    |      | Weight (g) | Part No. |
|-------------------------------------|----------|-----------------|-----|----|------|------------|----------|
|                                     |          | A               | D   | L  | B    |            |          |
| <i>M2 Thread, Length 10 mm</i>      |          |                 |     |    |      |            |          |
| 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 |
| <i>M2 Thread, Length 20 mm</i>      |          |                 |     |    |      |            |          |
| 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              | 3   | 20 | 17.5 | 0.5        | 03969213 |
| Stylus with Ruby ball tip, Ø 4 mm   | Steel    | M2              | 4   | 20 | 13.4 | 0.8        | 03969214 |
| <i>M2 Thread, Length 30 mm</i>      |          |                 |     |    |      |            |          |
| 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 |
| <i>M2 Thread, Length 40 mm</i>      |          |                 |     |    |      |            |          |
| 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 |
| <i>M2 Thread, Length 50 mm</i>      |          |                 |     |    |      |            |          |
| 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 |
| <i>M3 Thread, Length 21 mm</i>      |          |                 |     |    |      |            |          |
| 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 |



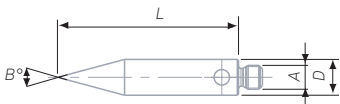
**Straight Styli**

Technical Characteristics

| Description                         | Material | Dimensions (mm) |     |     |      | Weight (g) | Part No. |
|-------------------------------------|----------|-----------------|-----|-----|------|------------|----------|
|                                     |          | A               | D   | L   | B    |            |          |
| <i>M3 Thread, Length 30 mm</i>      |          |                 |     |     |      |            |          |
| 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 |
| <i>M3 Thread, Length 40 mm</i>      |          |                 |     |     |      |            |          |
| Stylus with Ruby ball tip, Ø 3 mm   | TC       | M3              | 3   | 40  | 32.5 | 2.3        | 03969343 |
| <i>M3 Thread, Length 50 mm</i>      |          |                 |     |     |      |            |          |
| Stylus with Ruby ball tip, Ø 3 mm   | TC       | M3              | 3   | 50  | 42.5 | 2.78       | 03969353 |
| <i>M4 Thread, Length 20 mm</i>      |          |                 |     |     |      |            |          |
| Stylus with Ruby ball tip, Ø 2 mm   | Steel    | M4              | 2   | 19  | 8    | 2.3        | 03969402 |
| <i>M4 Thread, Length 50 mm</i>      |          |                 |     |     |      |            |          |
| Stylus with Ruby ball tip, Ø 8 mm   | Ceramic  | M4              | 8   | 50  | -    | 5.4        | 03969408 |
| <i>M4 Thread, Length 100 m</i>      |          |                 |     |     |      |            |          |
| Stylus with Ruby ball tip, Ø 8 mm   | Ceramic  | M4              | 8   | 100 | -    | 7          | 03969418 |

**Point Styli**

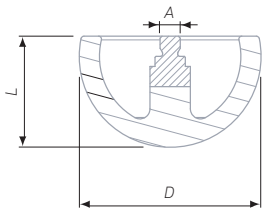
Technical Characteristics



| Description           | Material | Dimensions (mm) |     |    |    | Weight (g) | Part No. |
|-----------------------|----------|-----------------|-----|----|----|------------|----------|
|                       |          | A               | D   | L  | B  |            |          |
| <i>M2 Point Styli</i> |          |                 |     |    |    |            |          |
| 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**

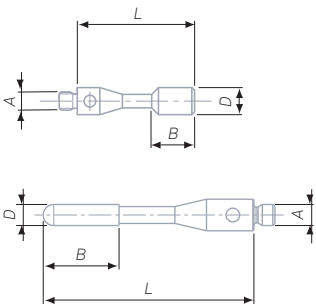
Technical Characteristics



| Description              | Material | Dimensions (mm) |    |    |   | Weight (g) | Part No. |
|--------------------------|----------|-----------------|----|----|---|------------|----------|
|                          |          | A               | D  | L  | B |            |          |
| <i>Hollow Ball Styli</i> |          |                 |    |    |   |            |          |
| 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) |     |    |     | Weight (g) | Part No. |
|---------------------------------|----------|-----------------|-----|----|-----|------------|----------|
|                                 |          | A               | D   | L  | B   |            |          |
| <i>M2 Cylinder Styli</i>        |          |                 |     |    |     |            |          |
| 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

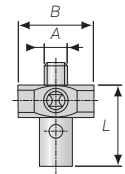
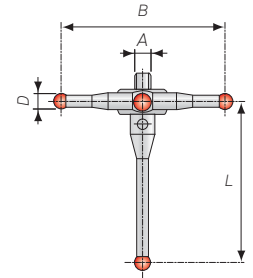
| Description              | Material | Dimensions (mm) |     |      |      | Weight (g) | Part No. |
|--------------------------|----------|-----------------|-----|------|------|------------|----------|
|                          |          | A               | D   | L    | B    |            |          |
| <i>M2 parallel styli</i> |          |                 |     |      |      |            |          |
| 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) |     |     |    | Weight (g) | Part No. |
|------------------------------|----------|-----------------|-----|-----|----|------------|----------|
|                              |          | A               | D   | L   | B  |            |          |
| <i>M2 star styli</i>         |          |                 |     |     |    |            |          |
| 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 |
| <i>M3 star styli</i>         |          |                 |     |     |    |            |          |
| 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 |
| <i>Crosspieces</i>           |          |                 |     |     |    |            |          |
| 5 directions – M2            | Steel    | M2              | -   | 7.5 | 7  | 1          | 03969054 |
| 5 directions – M3            | Steel    | M3              | -   | 13  | 10 | 3,7        | 03969046 |

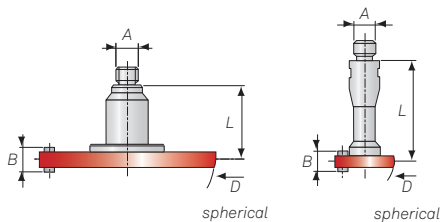


**Disc styli**

Technical Characteristics



| Description            | Material | Dimensions (mm) |    |      |     | Weight (g) | Part No. |
|------------------------|----------|-----------------|----|------|-----|------------|----------|
|                        |          | A               | D  | L    | B   |            |          |
| <i>M2 disc styli</i>   |          |                 |    |      |     |            |          |
| 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 |

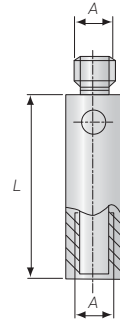


Styli Extensions



Technical Characteristics

| Description             | Material | Dimensions (mm) |   |    |   | Weight (g) | Part No. |
|-------------------------|----------|-----------------|---|----|---|------------|----------|
|                         |          | A               | D | L  | B |            |          |
| <i>M2 Extensions</i>    |          |                 |   |    |   |            |          |
| 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 |
| <i>M3 Extensions</i>    |          |                 |   |    |   |            |          |
| 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 |
| <i>M4 Extensions</i>    |          |                 |   |    |   |            |          |
| M4 Extension, L = 30 mm | Ceramic  | M4              | - | 30 | - | 5.1        | 03969401 |

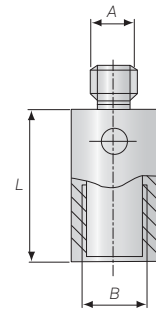


Probe Adapters



Technical Characteristics

| Description     | Material | Dimensions (mm) |   |   |    | Weight (g) | Part No. |
|-----------------|----------|-----------------|---|---|----|------------|----------|
|                 |          | A               | D | L | B  |            |          |
| <i>Adapters</i> |          |                 |   |   |    |            |          |
| 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

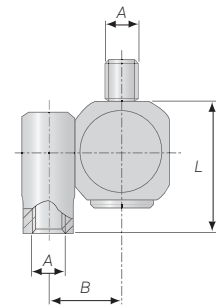


Technical Characteristics

| Description   | Material | Dimensions (mm) |   |    |     | Weight (g) | Part No. |
|---------------|----------|-----------------|---|----|-----|------------|----------|
|               |          | A               | D | L  | B   |            |          |
| <i>Joints</i> |          |                 |   |    |     |            |          |
| 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
  - M2-M3 stylus key
  - Key for carbon-fiber stylus

part no. 042086  
 part no. 047866  
 part no. 050697



Styli Kits

Technical Characteristics

| Description                                    | QTY | Part No. |
|--|-----|----------|
| <i>Stylus kit 8 - M2</i>                       |     | 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 |
| <i>Stylus kit 1 - M2</i>                       |     | 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 |
| <i>Accessory Kit M3</i>                        |     | 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 |
| <i>Accessory Kit 3 M3</i>                      |     | 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. |
|---|-----|----------|
| <i>Stylus kit 3 - M2</i>                |     | 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 |
| <i>Stylus kit 7 - M2</i>                |     | 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 |
| <i>Accessory Kit 2 M3</i>               |     | 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 |
| <i>Stylus kit - M2</i>                  |     | 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        |
| 03939382 | Flange HH-A -2.5 to DEA   |
| 03939383 | Ø 9.5mm Shank for HH-A    |
| 03939370 | Ø 20mm Shank for HH-A     |
| 03939371 | Ø 12mm Shank for HH-A     |
| 03939372 | Sub-D HD 15 Pin           |
| 03939065 | Sub-D 15 Pin              |
| 03939066 | LEMO 14 Pin               |
| 03939067 | Sub-D HD 15 Pin Sheffield |
| 03939068 | LEMO 14 Pin L300mm        |
| 053450   | PROBE HEAD                |

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                      |
| Built-in | Adapter Sub-D HD15 pin Sheffield |
| 03960289 | Adapter LEMO 14 Pin L300mm       |
| 03960290 | Adapter Sub-D HD15 Pin           |
| 03960291 |                                  |

HH-AS8-T5

|             |   |
|-------------|---|
| 03939270    | X |
| HH-AS6-T5   |   |
| 03939260    | X |
| HH-AS8-T7.5 |   |
| 03939362    | 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   | d9,5mm Shaft               |
| Built-in | DIN 5 Pin Connection       |
| Built-in | Sub-D HD 15 Pin Connection |
| Built-in | Sub-D 15 Pin Connection    |
| Built-in | LEMO 14-Pin Connection     |
| 050030   | M3 Stylus 2 x 21mm         |
| 050031   | M3 Stylus 3 x 21mm         |
| 050032   | M3 Stylus 4 x 21mm         |
| 050033   | M3 Extension L10mm         |
| 050034   | M3 Extension L20mm         |
| 050035   | Star stylus connector      |

*HH-P*

|          |   |   |   |   |   |   |   |   |   |
|----------|---|---|---|---|---|---|---|---|---|
| 03939019 | X |   |   | X |   |   |   |   |   |
| 03939020 | X | X |   |   | X |   |   |   |   |
| 03939021 | 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   | Cable DIN 5 Pin        |
| 050032   | M3 Stylus 4 x 21mm     |
| 051555   | D20mm Shaftadapter     |
| 03969071 | Cable DIN-DIN          |
| 03969072 | Cable LEMO             |
| 03969073 | Cable Sub-D 15 Pin     |
| 03969074 | Cable Sub-D, 15 Pin HD |

*HH-MI*

|          |   |   |   |  |  |  |  |  |
|----------|---|---|---|--|--|--|--|--|
| 03939030 | X | X |   |  |  |  |  |  |
| 03939103 | X | X | X |  |  |  |  |  |

*HH-MI-M*

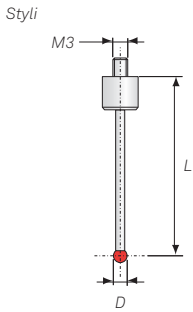
|          |   |  |  |  |  |  |  |  |
|----------|---|--|--|--|--|--|--|--|
| 03939031 | X |  |  |  |  |  |  |  |
|----------|---|--|--|--|--|--|--|--|



**HP-S-X1S ACCESSORIES**

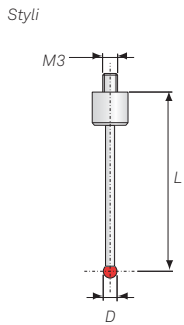
Technical Characteristics

| Description                       | Material | Dimensions (mm) |     | Weight (g) | QTY | Part No.        |
|-----------------------------------|----------|-----------------|-----|------------|-----|-----------------|
|                                   |          | D               | L   |            |     |                 |
| Standard-Styli Kit HP-S-X1S incl: |          |                 |     |            |     | M00-694-009-000 |
| <i>Styli:</i>                     |          |                 |     |            |     |                 |
| 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 |

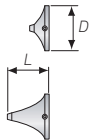


Technical Characteristics

| Description                      | Material  | Dimensions (mm) |     | Weight (g) | Part No.        |
|----------------------------------|-----------|-----------------|-----|------------|-----------------|
|                                  |           | D               | L   |            |                 |
| <i>Additional Styli</i>          |           |                 |     |            |                 |
| 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 |
| <i>Styli holders</i>             |           |                 |     |            |                 |
| 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 |



Styli holders



**HP-S-X1M ACCESSORIES**

Technical Characteristics

| Description                        | Material | Dimensions (mm) |     | Weight (g) | Part No.        |
|------------------------------------|----------|-----------------|-----|------------|-----------------|
|                                    |          | D               | L   |            |                 |
| 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 |

Stylus holder with extension



**HP-S-X1H ACCESSORIES**

Technical Characteristics

Styli Holder

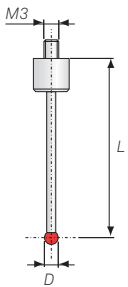


M00-694-209-000

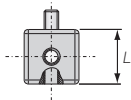


M00-694-244-000

Styli



Cube



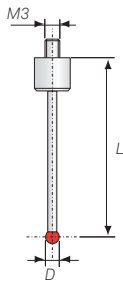
M00-694-243-000

| Description                        | Material        | Dimensions (mm) |      | Weight (g) | QTY | Part No.        |
|------------------------------------|-----------------|-----------------|------|------------|-----|-----------------|
|                                    |                 | D               | L    |            |     |                 |
| Standard Styli Kit HP-S-X1H incl.: |                 |                 |      |            |     | M00-694-014-000 |
| <i>Stylus holder</i>               |                 |                 |      |            |     |                 |
| 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 |
| <i>Styli</i>                       |                 |                 |      |            |     |                 |
| 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 |
| <i>Extensions</i>                  |                 |                 |      |            |     |                 |
| 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 |
| <i>Cube</i>                        |                 |                 |      |            |     |                 |
| 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

Styli



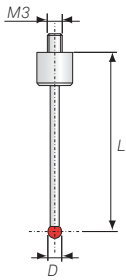
| Description                         | Material | Dimensions (mm) |    | Weight (g) | QTY | Part No.        |
|-------------------------------------|----------|-----------------|----|------------|-----|-----------------|
|                                     |          | D               | L  |            |     |                 |
| Standard Styli Kit HP-S-X1C incl. : |          |                 |    |            |     | M00-694-008-000 |
| <i>Styli</i>                        |          |                 |    |            |     |                 |
| 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) |   | Weight (g) | Thread | Part No. |
|-------------|----------|-----------------|---|------------|--------|----------|
|             |          | D               | L |            |        |          |

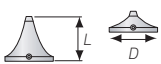
Styli



*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



*Styli holders*

|                             |                 |            |      |    |     |                 |
|-----------------------------|-----------------|------------|------|----|-----|-----------------|
| Stylus holder, M3           | Aluminium       | -          | -    | 7  | -   | M00-694-209-000 |
| Stylus holder X1H, rotating | Aluminium/Steel | 30         | 25,5 | 15 | -   | M00-694-244-000 |
| 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, rotating     | Aluminium       | 30°<br>40° | 22,5 | 2  | M3  | M00-694-274-000 |

M00-694-244-000



M00-694-271-000 M00-694-272-000

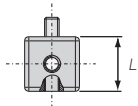
*Extensions*

|                    |              |     |     |   |   |                 |
|--------------------|--------------|-----|-----|---|---|-----------------|
| 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 |

M00-694-055-000



Cube



M00-694-243-000

*Cube*

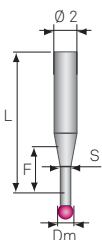
|             |           |   |    |     |   |                 |
|-------------|-----------|---|----|-----|---|-----------------|
| Cube L 13mm | Aluminium | - | 13 | 2,5 | - | M00-692-243-000 |
|-------------|-----------|---|----|-----|---|-----------------|

**HP-S-X1H | HP-S-X1C ADDITIONAL ACCESSORIES**

Technical Characteristics

| Description                      | Material | Dimensions (mm) |     |    |   | Weight (g) | Part No.        |
|----------------------------------|----------|-----------------|-----|----|---|------------|-----------------|
|                                  |          | Dm              | S   | L  | F |            |                 |
| 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 Stylus Ø 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 |

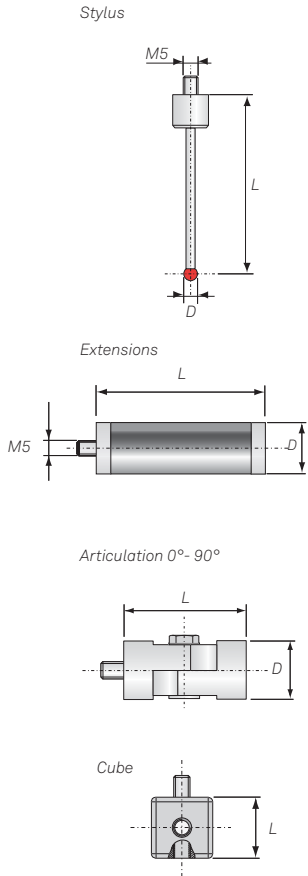
**Special Styli, Shaft Ø 2 mm**





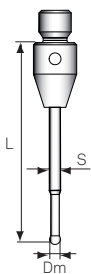
**HP-S- X3 ACCESSORIES**

Technical Characteristics



| Description                            | Material  | Dimensions (mm) |    |    | Weight (g) | QTY | Part No.        |
|--|-----------|-----------------|----|----|------------|-----|-----------------|
|  |           | D               | L  |    |            |     |                 |
| Standard Styli Kit HP-S-X3 incl. Styli |           |                 |    |    |            |     | M00-694-007-000 |
| 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 |
| <i>Extensions</i>                      |           |                 |    |    |            |     |                 |
| 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 |
| <i>Stylus joint</i>                    |           |                 |    |    |            |     |                 |
| Stylus joint 0° - 90°                  | Titanium  | 12              | 34 | 21 | 1          |     | 060-813.051-000 |
| <i>Cubes</i>                           |           |                 |    |    |            |     |                 |
| 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 |

**Styli with diamond coated spheres**



Technical Characteristics

| Description                      | Material | Dimensions (mm)  |                 |                 | Weight (g) | Thread | Part No.        |
|----------------------------------|----------|------------------|-----------------|-----------------|------------|--------|-----------------|
|                                  |          | Dm <sup>1)</sup> | S <sup>1)</sup> | L <sup>1)</sup> |            |        |                 |
| <i>Styli with coated spheres</i> |          |                  |                 |                 |            |        |                 |
| Styli, Ø 1,0 mm, L 20 mm         | HM       | 1,0              | 1,0             | 20              | 0,4        | M3     | M00-694-197-000 |
| Styli, Ø 3,0 mm, L 20 mm         | HM       | 3,0              | 2,0             | 20              | 0,5        | M3     | M00-694-198-000 |
| Styli, Ø 3,0 mm, L 50 mm         | HM       | 3,0              | 2,0             | 50              | 0,8        | M3     | M00-694-199-000 |

<sup>1)</sup> further sizes available on request

**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.        |
| <b>Exchangeable Temperatur Sensor Basis Kit</b><br>(incl. Clamping, Sensor), calibrated                      | M00-741-073-000 |
| <b>Exchangeable Temperatur Sensor Complete Kit</b><br>(incl. Clamping, Sensor, Joint, Extension), calibrated | M00-741-079-000 |
| <b>Extension</b>   | M00-741-062-150 |
| <b>Joint</b>   | M00-741-062-050 |

**Technical Characteristics**

| Description | Material | Dimensions (mm) |   | Weight (g) | QTY | Part No. |
|-------------|----------|-----------------|---|------------|-----|----------|
|             |          | D               | L |            |     |          |

Standard Styli Kit for M5 Threads incl. : M00-694-006-000

*Styli*

|                        |    |     |     |    |   |                 |
|------------------------|----|-----|-----|----|---|-----------------|
| Stylus Ø 1.5mm, L 28mm | HM | 1.5 | 28  | 10 | 2 | M00-694-150-016 |
| Stylus Ø 3mm, L 35mm   | HM | 3   | 35  | 11 | 4 | 060-694.050-000 |
| Stylus Ø 5mm, L 80mm   | HM | 5   | 80  | 19 | 2 | 060-694.054-000 |
| Stylus Ø 8mm, L 130mm  | HM | 8   | 130 | 63 | 1 | M00-694-138-000 |
| Stylus Ø 8mm, L 176mm  | HM | 8   | 176 | 38 | 1 | 060-694-150-014 |

*Extensions*

|                        |          |    |     |    |   |                 |
|------------------------|----------|----|-----|----|---|-----------------|
| Extension Ø 12 x 20mm  | Titanium | 12 | 20  | 9  | 1 | 060-694.036-000 |
| Extension Ø 12 x 50mm  | Titanium | 12 | 50  | 16 | 1 | 060-813.034-000 |
| Extension Ø 12 x 70mm  | Titanium | 12 | 70  | 18 | 1 | 060-813.033-000 |
| Extension Ø 18 x 100mm | Titanium | 18 | 100 | 43 | 1 | 060-694.032-000 |
| Extension Ø 18 x 200mm | Titanium | 18 | 200 | 68 | 1 | 060-694.030-000 |

*Cubes*

|                  |    |   |    |    |   |                 |
|------------------|----|---|----|----|---|-----------------|
| Cube 15mm x 15mm | HM | - | 15 | 11 | 2 | 060-694.016-000 |
| Cube 20mm x 20mm | 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 1.5mm DIN 911 M02-B04-703-097

Allen key 3mm DIN 911 M02-B04-703-100

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

**Technical Characteristics**

| Description | Material | Dimensions (mm) |   |   |   | Weight (g) | Part No. |
|-------------|----------|-----------------|---|---|---|------------|----------|
|             |          | Dm              | S | L | F |            |          |

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

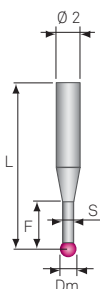
Special Stylus, Ø 0.8 mm, L 22 mm HM 0.8 0.6 22 4 1 M00-694-063-005

Special Stylus, Ø 0.5 mm, L 22 mm HM 0.5 0.3 22 4 1 M00-694-064-005

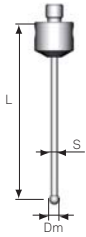
Special Stylus, Ø 0.3 mm, L 22 mm HM 0.3 0.2 22 4 1 M00-694-067-005

Special Stylus, Ø 1.0 mm, L 34 mm HM 1.0 0.8 34 14 M02-J01-100-008

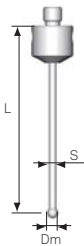
**Special Styli, Shaft Ø 2 mm**



**Styli with diamond coated spheres**



**Styli with spheres made of diamond**



Technical Characteristics

| Description               | Material | Dimensions (mm)  |                 |                 | Weight (g) | Thread | Part No.        |
|---------------------------|----------|------------------|-----------------|-----------------|------------|--------|-----------------|
|                           |          | Dm <sup>1)</sup> | S <sup>1)</sup> | L <sup>1)</sup> |            |        |                 |
| Styli with coated spheres |          |                  |                 |                 |            |        |                 |
| Stylus, Ø 1.0 mm, L 30 mm | HM       | 1.0              | 2.0             | 30              | 7.2        | M5     | M00-694-196-000 |
| Stylus, Ø 3.0 mm, L 35 mm | HM       | 3.0              | 2.0             | 35              | 7.2        | M5     | M00-694-187-000 |
| Stylus, Ø 3.0 mm, L 50 mm | HM       | 3.0              | 2.0             | 50              | 7.8        | M5     | M00-694-188-000 |
| Stylus, Ø 5.0 mm, L 80mm  | HM       | 5.0              | 2.0             | 80              | 13.2       | M5     | M00-694-189-000 |

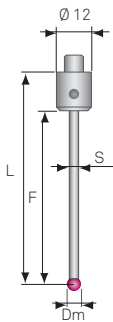
Styli with spheres made of solid material

|  |    |     |     |    |   |    |                 |
|--|----|-----|-----|----|---|----|-----------------|
| Special Stylus, Ø 1.0 mm, L 22 mm, Diamond | HM | 1.0 | 2.0 | 22 | 1 |    | 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 |

<sup>1)</sup> further sizes available on request

**M5 Styli**

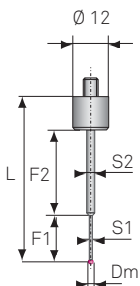
Technical Characteristics



| Description                               | Material | Dimensions (mm) |     |     |     | Weight (g) | Part No.        |
|---|----------|-----------------|-----|-----|-----|------------|-----------------|
|   |          | Dm              | S   | L   | F   |            |                 |
| 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 |

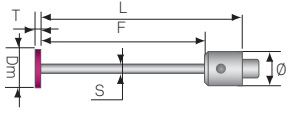
**M5 Styli, Taper Shaft**

Technical Characteristics



| Description                        | Material | Dimensions (mm) |       |    |       | Weight (g) | Part No.        |
|------------------------------------|----------|-----------------|-------|----|-------|------------|-----------------|
|                                    |          | Dm              | S1/S2 | L  | F1/F2 |            |                 |
| 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 |

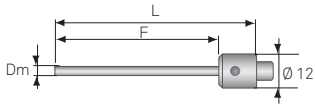
**M5 Disc Styli**



**Technical Characteristics**

| Description                       | Dimensions (mm) |     |    |    | Weight (g) | Part No.        |
|-----------------------------------|-----------------|-----|----|----|------------|-----------------|
|                                   | Dm/T            | S   | L  | F  |            |                 |
| 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 |

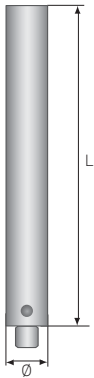
**M5 Cylinder styli**



**Technical Characteristics**

| Description                      | Material | Dimensions (mm) |    |    | Weight (g) | Part No.        |
|----------------------------------|----------|-----------------|----|----|------------|-----------------|
|                                  |          | Dm              | L  | F  |            |                 |
| 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 |

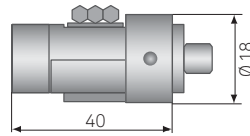
**Styli Kits for Gear Inspection**

Technical Characteristics

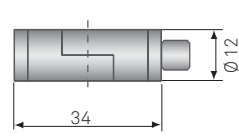
| Description  | Weight (g) | QTY | Part No.        |
|--|------------|-----|-----------------|
| Styli Kit for internal helical gears, Mn 5 - 35 mm |            |     | M00-694-046-000 |
| Cube, 20 mm  | 32         | 2   | 060-684.044-004 |
| Stylus, Ø 5 mm, L 80 mm                            | 19         | 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.

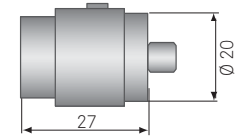
**Joints and Cubes**



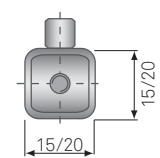
Stylus Joint 0°-90°, Ø 18 mm  
M00-694-010-000  
Weight: 41 g



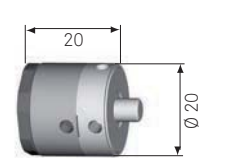
Stylus Joint 0°-90°, Ø 12 mm  
060-813.051-000  
Weight: 21 g



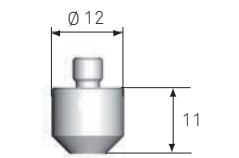
Rotary Joint, Ø 20 mm  
060-694.013-000  
Weight: 49 g



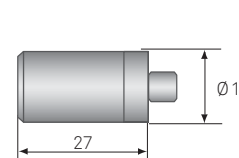
Cube, L 15 mm  
060-694.016-000  
Weight: 11 g



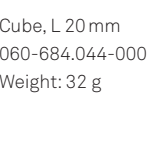
Rotary Joint, Titanium  
M00-114-102-000  
Weight: 27 g



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

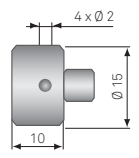


Rotary Joint, Ø 14 mm  
060-813.055-000  
Weight: 26 g

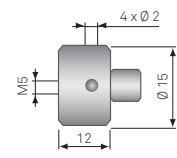


Cube, L 20 mm  
060-684.044-000  
Weight: 32 g

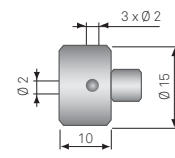
**Holder for Special Styli, Shaft Ø 2 mm**



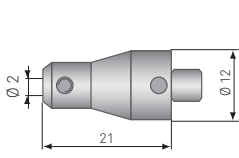
Holder for 4+1 Special Stylus  
060-694.060-000  
Weight: 8 g



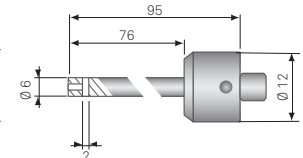
Holder for 4 Special Stylus + M5  
M00-694-061-000  
Weight: 9 g



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

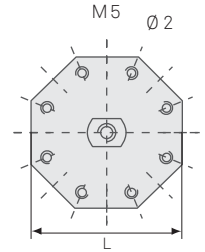


Holder for 1 Special Stylus, 90°, L 95 mm  
M00-694-069-000  
Weight: 30 g

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 |

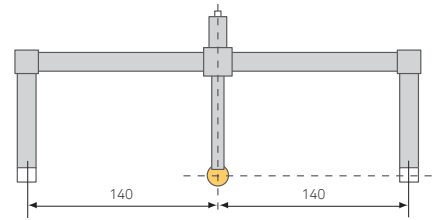


Styli Holder with Adjustable Slant



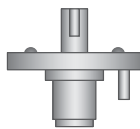
M00-694-017-000  
Stylus holder with adjustable slant for 2 x M5  
Weight: 97 g

Styli Holder for Constant Velocity Joints

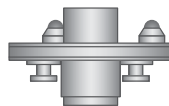


M00-694-095-000  
Weight: 133 g

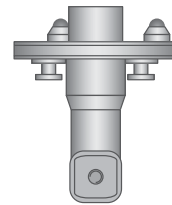
Styli Clampings



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:  
M00-813-101-000,  
M00-813-111-000,  
M00-813-117-000

Styli Receptacles



\*Receptacle PMM  
060-691.492-000  
Weight: 240 g

\* not compatible to Stylus Racks HR-X, HR-XS, HR-XS-EX



\*Receptacle  
M00-114-112-000



\*Receptacle  
M00-114-111-000



\*Receptacle  
M00-114-110-000



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



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

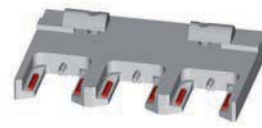
Styli Receptacles  
for Styliv Changer Racks  
HR-X | HR-XS | HR-XS-EX



HR-X1-P  
M00-114-113-000  
compatible with HP-S-X1S,  
HP-S-X1H, HP-S-X1C



HR-X1-P-SF  
M00-114-167-000  
compatible with HP-S-X1S,  
HP-S-X1H, HP-S-X1C

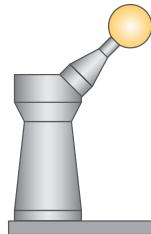


HR-X1-3P  
M00-114-213-000  
compatible with HP-S-X1S



HR-X3-P  
M00-114-109-000  
compatible with HP-S-X3

Reference Spheres



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



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



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

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

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



Tommy Bar 100 x 3 mm  
060-694.021-011



Chamois Leather  
M07-S02-000-012

Customized styli and holders are available on request.
















# HEXAGON

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