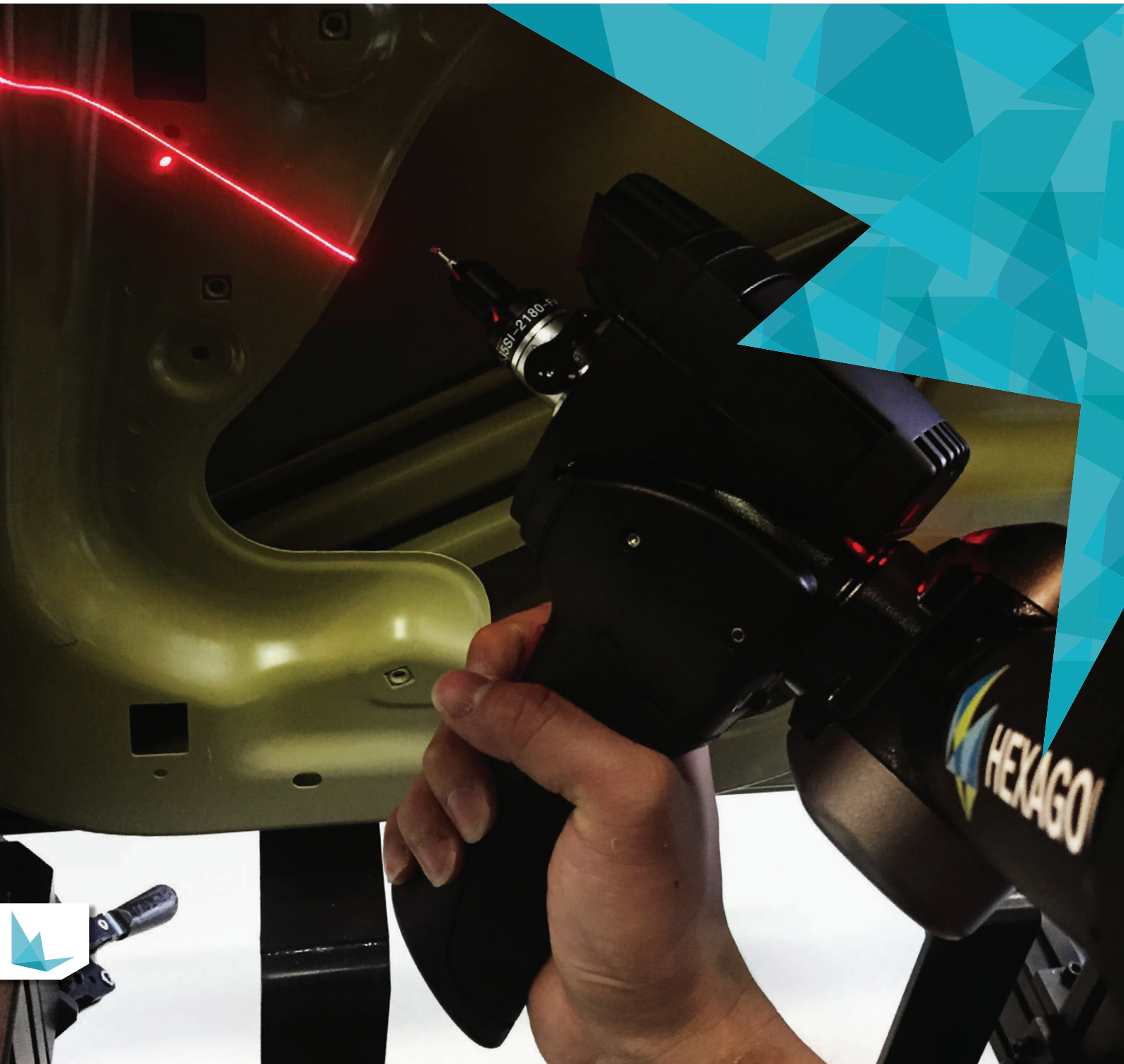
HEXAGON
MANUFACTURING INTELLIGENCE

PRODUCT BROCHURE

ROMER ABSOLUTE ARM

ADVANCED PORTABLE 3D MEASUREMENT




HEXAGON
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ABSOLUTE QUALITY DRIVES ABSOLUTE PRODUCTIVITY

Portable. Accurate. Versatile. Effortless. The ROMER Absolute Arm range from Hexagon Manufacturing Intelligence is the leading workshop metrology solution for fast and reliable measurement wherever it's needed.

An all-purpose 3D-measurement tool for inspection, analysis and digitising, this is portable measurement technology at its best. The ROMER Absolute Arm series presents ideal solutions for applications spanning research, design and manufacturing across a wide range of industries.

Easy to use with minimum training, every ROMER Absolute Arm is built on a platform of total portability, stability and advanced technology. Accurate measurement has never been this easy.

ROMER ABSOLUTE ARM
The Full Product Range

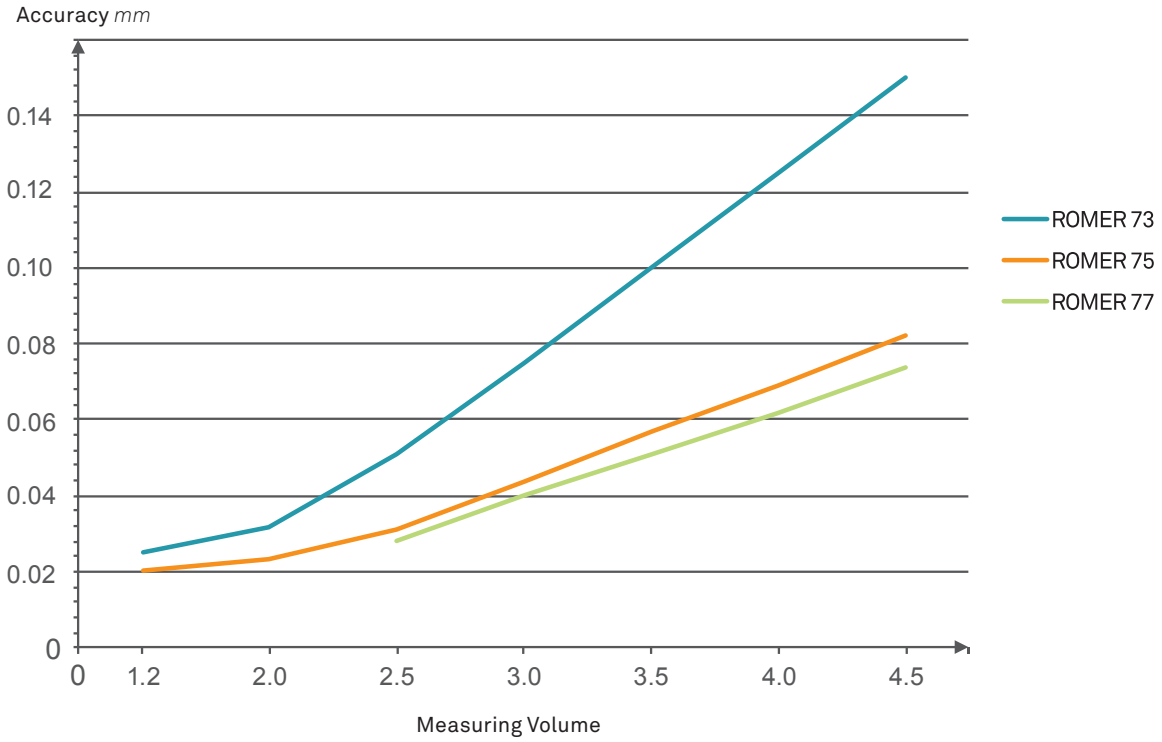
The ROMER Absolute Arm product range is built on four core models, each designed to meet the demands of customers across a wide array of industries and applications.

- **The ROMER Absolute Arm**
  The choice for versatile portable probe measurement.
- **The ROMER Absolute Arm Compact**
  The choice for ultra-high accuracy probing of smaller items.
- **The ROMER Absolute Arm with Integrated Scanner**
  The choice for all-purpose integrated probing and scanning.
- **The ROMER Absolute Arm with External Scanner**
  The choice for the most challenging laser scanning applications.

CHOOSE ACCURACY
Meeting the Demands of Measurement

Each ROMER Absolute Arm model is available at different accuracy levels to ensure the right configuration is available for any measurement application.

- The **73 Series** is the perfect solution for users looking for entry-level measurement accuracy.
- For applications that demand greater precision, the **75 Series** strikes the perfect balance between value and accurate measurement.
- Designed as the ultimate solution for portable high-end measurement, the **77 Series** is the most accurate ROMER Absolute Arm ever developed.



**Accuracy figures shown refer to standard ROMER Absolute Arm probing measurement function.*

ROMER ABSOLUTE ARM
Defining Features

Every ROMER Absolute Arm is built on a foundation of advanced technology and innovation that sets a new standard for what's possible when it comes to portable measurement.

Measure

- Available in seven sizes providing measurement volumes between 1.2 and 4.5 metres.
- Probing accuracy as fine as only 20 microns and scanning accuracy to within 50 microns.
- High-tech carbon-fibre construction ensures strength and thermal stability under any environmental condition.
- Proprietary RDS software featuring SMART – Self-Monitoring Analysis and Reporting Technology – provides diagnostics monitoring, including shocks and temperature.
- Probing and scanning accuracy certified to B89.4.22 standard, with alternative certifications for probing functions according to VDI/VDE 2617-9 and ISO 10360-2 standards also available.

Connect

- Easily interchangeable Feature Packs allow for WiFi connection to a standard laptop or desktop PC, as well as laser scanning over WiFi and full battery-powered operation.
- Access to simple measurements and diagnostics on WiFi enabled arms through a mobile device with the RDS Mobile app.
- Fully compatible with all major portable metrology software packages.
- Further enhance arm functionality with a range of accessories, from probing attachments to measurement volume expansion systems.
- High-speed laser scanning accessories make total analysis of parts simpler and more accessible – choose a scanner according to required accuracy and level of 3D point cloud definition.

Form

- Light and agile operation facilitated by a highly optimised design echoing the uneven arm ratio typical of industrial robot design.
- Sophisticated counterbalance system eliminates torque at the base of the arm, allowing for effortless movement, better accuracy and a wider range of mounting options.
- Ergonomically designed wrist and control buttons allow for complete one-handed operation.
- Rotating low-friction handling grips minimise user fatigue and maximise accuracy as well as ensuring thermal stability.

Function

- Absolute Encoders within articulation joints eliminate referencing and warm-up times.
- No touch-probe or laser scanner calibrations required in the field.
- Haptic, visual and acoustic feedback allows for easy user interaction in even the harshest industrial environments.
- Added WiFi connectivity reduces hazards by removing inconvenient cabling.
- SmartLock allows the arm to be fixed in a convenient position during measurement, as well as allowing it to be safely locked into the rest position while not in use.

> The **ROMER Absolute Arm** guarantees the quality of our products."
>
> **Marcin Wojciechowski**, Solaris
> **Sroda Wielkopolska,** Poland

ROMER ABSOLUTE ARM

The Standard for Portable 3D Probing

Designed for highly-accurate tactile 3D measurement on countless types of work-piece, the ROMER Absolute Arm allows for reliable touch-probe measurement and inspection within almost any application context.

From sheet metal parts to plastic or carbon-fibre components, the quality and versatility of the ROMER Absolute Arm has seen it established as one of the world's foremost portable measurement tools across a wide range of industries.

Compatible with a large selection of accessories designed to expand its measurement possibilities, the ROMER Absolute Arm is fully upgradeable to both laser scanning and tube measurement capabilities through the addition of the HP-L-8.9 Laser Scanner or a variety of infra-red non-contact tube probes.

73-SERIES		**7320 (2.0 m)**	**7325 (2.5 m)**	**7330 (3.0 m)**	**7335 (3.5 m)**	**7340 (4.0 m)**	**7345 (4.5 m)**
	Single point repeatability	0.030 mm / 0.0012 in	0.038 mm / 0.0015 in	0.059 mm / 0.0023 in	0.079 mm / 0.0031 in	0.099 mm / 0.0039 in	0.120 mm / 0.0047 in
	Volumetric accuracy	± 0.042 mm / 0.0017 in	± 0.051 mm / 0.0020 in	± 0.075 mm / 0.0030 in	± 0.100 mm / 0.0039 in	± 0.125 mm / 0.0049 in	± 0.150 mm / 0.0059 in
	Arm weight	7.4 kg / 16.3 lbs	7.7 kg / 17.0 lbs	8.0 kg / 17.6 lbs	8.3 kg / 18.3 lbs	8.6 kg / 19.0 lbs	8.9 kg / 19.6 lbs
75-SERIES		**7520 (2.0 m)**	**7525 (2.5 m)**	**7530 (3.0 m)**	**7535 (3.5 m)**	**7540 (4.0 m)**	**7545 (4.5 m)**
	Single point repeatability	0.016 mm / 0.0006 in	0.020 mm / 0.0008 in	0.030 mm / 0.0012 in	0.040 mm / 0.0016 in	0.055 mm / 0.0022 in	0.070 mm / 0.0028 in
	Volumetric accuracy	± 0.023 mm / 0.0009 in	± 0.029 mm / 0.0011 in	± 0.044 mm / 0.0017 in	± 0.057 mm / 0.0022 in	± 0.069 mm / 0.0027 in	± 0.082 mm / 0.0032 in
	Arm weight	7.7 kg / 17.0 lbs	8.0 kg / 17.6 lbs	8.3 kg / 18.3 lbs	8.6 kg / 19.0 lbs	8.9 kg / 19.6 lbs	9.2 kg / 20.3 lbs
77-SERIES			**7725 (2.5 m)**	**7730 (3.0 m)**	**7735 (3.5 m)**	**7740 (4.0 m)**	**7745 (4.5 m)**
	Single point repeatability		0.017 mm / 0.0007 in	0.026 mm / 0.0010 in	0.034 mm / 0.0013 in	0.047 mm / 0.0019 in	0.060 mm / 0.0024 in
	Volumetric accuracy		± 0.026 mm / 0.0010 in	± 0.040 mm / 0.0016 in	± 0.051 mm / 0.0020 in	± 0.062 mm / 0.0024 in	± 0.074 mm / 0.0029 in
	Arm weight		8.0 kg / 17.6 lbs	8.3 kg / 18.3 lbs	8.6 kg / 19.0 lbs	8.9 kg / 19.6 lbs	9.2 kg / 20.3 lbs

ROMER ABSOLUTE ARM COMPACT

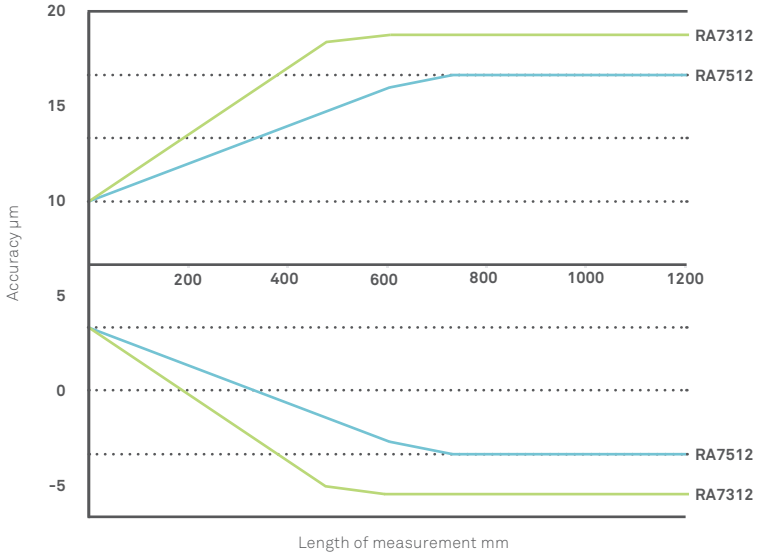
Concentrated Measurement Accuracy

Combining ultra-high accuracy with a small form factor, the ROMER Absolute Arm Compact has been designed for optimum results in tight spaces.

Featuring an integrated base and a unique counter-weight balancing system for improved ease-of-use, the ROMER Absolute Arm Compact can be placed anywhere, even inside a machining centre, guaranteeing accuracy where it's needed most.

Concentrating the advanced technology of the full-sized ROMER Absolute Arm into an even more portable package, this arm represents the perfect choice for measuring small-to-medium parts with absolute accuracy. The model is fully compatible with WiFi operation and the HP-L-8.9 laser scanner.

ROMER ABSOLUTE ARM COMPACT
VOLUMETRIC ACCURACY TO ISO 10360-2 (MPEe)



	Model	7312	7512
	Measuring range	1.2 m	1.2 m
B89.4.22	Single point repeatability	0.014 mm / 0.0006 in	0.010 mm / 0.0004 in
B89.4.22	Volumetric accuracy	± 0.025 mm / 0.0010 in	± 0.020 mm / 0.0008 in
ISO 10360-2	MPE_p	8 µm	6 µm
ISO 10360-2	MPE_e	5+L/40 18 µm	5+L/65 15 µm
	Arm weight	10.2 kg / 22.5 lbs	10.8 kg / 23.8 lbs

CERTIFICATION
Full Accuracy with B89 or ISO

The ROMER Absolute Arm Compact is offered with a choice of two certifications: B89.4.22 or ISO 10360-2. Each certification quotes the arm accuracy in a different way. B89 is the standard certification typically used for portable CMMs and quotes the arm performance (volumetric accuracy and point repeatability).

ISO certification is a stationary CMM type certification that quotes the arm accuracy according to a variable 'L', where 'L' is equal to the length of measurement that is being performed. A higher L-value denotes a larger measurement distance, such that ISO-certified accuracy increases with lower L-values.

ROMER ABSOLUTE ARM WITH INTEGRATED SCANNER

Built-in 3D Measurement Versatility

The ROMER Absolute Arm SI is an all-purpose metrology system designed to meet the needs of almost any measurement application. The fully-certified and integrated RS4 laser scanner is designed to capture 3D point data from a wide variety of surface types. It requires no calibrations, warm-up time or additional cables and controllers. It is totally integrated.

Switching seamlessly between tactile probe measurements and laser scanning at any time, the ROMER Absolute Arm SI is ideally suited to point-cloud inspection, product benchmarking, reverse engineering, rapid prototyping, virtual assembly and CNC milling.

The accuracy of the complete scanning system is fully verifiable and traceable, ensuring users always have complete confidence in the exactness of their measurements.

73-SERIES		**7320SI (2.0 m)**	**7325SI (2.5 m)**	**7330SI (3.0 m)**	**7335SI (3.5 m)**	**7340SI (4.0 m)**	**7345SI (4.5 m)**
	Single point repeatability	0.044 mm / 0.0017 in	0.049 mm / 0.0019 in	0.079 mm / 0.0031 in	0.099 mm / 0.0039 in	0.115 mm / 0.0045 in	0.141 mm / 0.0056 in
	Volumetric accuracy	± 0.061 mm / 0.0024 in	± 0.069 mm / 0.0027 in	± 0.100 mm / 0.0039 in	± 0.125 mm / 0.0049 in	± 0.151 mm / 0.0059 in	± 0.179 mm / 0.0070 in
	Scanning system accuracy (RS4)	0.079 mm / 0.0031 in	0.084 mm / 0.0033 in	0.119 mm / 0.0047 in	0.147 mm / 0.0058 in	0.181 mm / 0.0071 in	0.214 mm / 0.0084 in
	Arm weight	8.3 kg / 18.3 lbs	8.6 kg / 19.0 lbs	8.9 kg / 19.6 lbs	9.2 kg / 20.3 lbs	9.5 kg / 20.9 lbs	9.8 kg / 21.6 lbs
75-SERIES		**7520SI (2.0 m)**	**7525SI (2.5 m)**	**7530SI (3.0 m)**	**7535SI (3.5 m)**	**7540SI (4.0 m)**	**7545SI (4.5 m)**
	Single point repeatability	0.023 mm / 0.0009 in	0.027 mm / 0.0011 in	0.042 mm / 0.0017 in	0.055 mm / 0.0022 in	0.067 mm / 0.0026 in	0.084 mm / 0.0033 in
	Volumetric accuracy	± 0.033 mm / 0.0013 in	± 0.038 mm / 0.0015 in	± 0.058 mm / 0.0023 in	± 0.0081 mm / 0.0032 in	± 0.098 mm / 0.0039 in	± 0.119 mm / 0.0047 in
	Scanning system accuracy (RS4)	0.058 mm / 0.0023 in	0.063 mm / 0.0025 in	0.083 mm / 0.0033 in	0.101 mm / 0.0040 in	0.119 mm / 0.0047 in	0.138 mm / 0.0054 in
	Arm weight	8.6 kg / 19.0 lbs	8.9 kg / 19.6lbs	9.2 kg / 20.3 lbs	9.5 kg / 20.9 lbs	9.8 kg / 21.6 lbs	10.1 kg / 22.3 lbs
77-SERIES			**7725SI (2.5 m)**	**7730SI (3.0 m)**	**7735SI (3.5 m)**	**7740SI (4.0 m)**	**7745SI (4.5 m)**
	Single point repeatability		0.023 mm / 0.0009 in	0.036 mm / 0.0014 in	0.047 mm / 0.0019 in	0.057 mm / 0.0022 in	0.071 mm / 0.0028 in
	Volumetric accuracy		± 0.034 mm / 0.0013 in	± 0.052 mm / 0.0020 in	± 0.073 mm / 0.0029 in	± 0.088 mm / 0.0035 in	± 0.107 mm / 0.0042 in
	Scanning system accuracy (RS4)		0.050 mm / 0.0020 in	0.066 mm / 0.0026 in	0.081 mm / 0.0032 in	0.095 mm / 0.0037 in	0.110 mm / 0.0043 in
	Arm weight		8.9 kg / 19.6 lbs	9.2 kg / 20.3 lbs	9.5 kg / 20.9 lbs	9.8 kg / 21.6 lbs	10.1 kg / 22.3 lb

Scanning Sensor Specifications: Integrated Scanner RS4		
Point acquisition rate		752 000 points/s
Points per line		Max. 7250
Line rate		Max.100 Hz
Line width	min.	80 mm
	mid.	115 mm
	max.	150 mm
Stand off		165 +/-50 mm
Accuracy		0.028 mm (2σ)
Minimum point spacing		0.011mm (line)
System scanning certification		Yes
Laser class		2M
Operating temperature		5–40°C

ROMER ABSOLUTE ARM WITH EXTERNAL SCANNER

High-end 3D Laser Scanning

Designed for use with the advanced HP-L-20.8 laser scanner, the ROMER Absolute Arm SE delivers first-class scanning performance on even the most complex surface types.

Featuring unique ‘flying dot’ technology, the HP-L-20.8 can scan multiple surface colours in a single pass. This technology allows point density and even laser stripe width to be modified by the user at any time, ensuring maximum scan detail is guaranteed where it’s needed most, unlike with most handheld scanners – it’s like having multiple scanners in a single sensor.

The accuracy of the complete scanning system is fully verifiable and traceable, ensuring users always have complete confidence in the exactness of their measurements.

		7320SE (2.0 m)	7325SE (2.5 m)	7330SE (3.0 m)	7335SE (3.5 m)	7340SE (4.0 m)	7345SE (4.5 m)
73-SERIES	Single point repeatability	0.044 mm / 0.0017 in	0.049 mm / 0.0019 in	0.079 mm / 0.0031 in	0.099 mm / 0.0039 in	0.115 mm / 0.0045 in	0.141 mm / 0.0056 in
	Volumetric accuracy	± 0.061 mm / 0.0024 in	± 0.069 mm / 0.0027 in	± 0.100 mm / 0.0039 in	± 0.125 mm / 0.0049 in	± 0.151 mm / 0.0059 in	± 0.179 mm / 0.0070 in
	Scanning system accuracy (HP-L-20.8)	0.075 mm / 0.0030 in	0.080 mm / 0.0031 in	0.113 mm / 0.0044 in	0.140 mm / 0.0055 in	0.172 mm / 0.0068 in	0.203 mm / 0.0080 in
	Arm weight	7.9 kg / 17.4 lbs	8.2 kg / 18.1 lbs	8.5 kg / 18.7 lbs	8.8 kg / 19.4 lbs	9.1 kg / 20.1 lbs	9.8 kg / 20.7 lbs
		7520SE (2.0 m)	**7525SE (2.5 m)**	**7530SE (3.0 m)**	**7535SE (3.5 m)**	**7540SE (4.0 m)**	**7545SE (4.5 m)**
75-SERIES	Single point repeatability	0.023 mm / 0.0009 in	0.027 mm / 0.0011 in	0.042 mm / 0.0017 in	0.055 mm / 0.0022 in	0.067 mm / 0.0026 in	0.084 mm / 0.0033 in
	Volumetric accuracy	± 0.033 mm / 0.0013 in	± 0.038 mm / 0.0015 in	± 0.058 mm / 0.0023 in	± 0.0081 mm / 0.0032 in	± 0.098 mm / 0.0039 in	± 0.119 mm / 0.0047 in
	Scanning system accuracy (HP-L-20.8)	0.053 mm / 0.0021 in	0.058 mm / 0.0023 in	0.078 mm / 0.0031 in	0.096 mm / 0.0038 in	0.114 mm / 0.0045 in	0.133 mm / 0.0052 in
	Arm weight	8.2 kg / 18.1 lbs	8.5 kg / 18.7 lbs	8.8 kg / 19.4 lbs	9.1 kg / 20.1 lbs	9.4 kg / 20.7 lbs	9.7 kg / 21.4 lbs
			7725SE (2.5 m)	**7730SE (3.0 m)**	**7735SE (3.5 m)**	**7740SE (4.0 m)**	**7745SE (4.5 m)**
77-SERIES	Single point repeatability		0.023 mm / 0.0009 in	0.036 mm / 0.0014 in	0.047 mm / 0.0019 in	0.057 mm / 0.0022 in	0.071 mm / 0.0028 in
	Volumetric accuracy		± 0.034 mm / 0.0013 in	± 0.052 mm / 0.0020 in	± 0.073 mm / 0.0029 in	± 0.088 mm / 0.0035 in	± 0.107 mm / 0.0042 in
	Scanning system accuracy (HP-L-20.8)		0.046 mm / 0.0018 in	0.062 mm / 0.0024 in	0.077 mm / 0.0030 in	0.091 mm / 0.0036 in	0.106 mm / 0.0042 in
	Arm weight		8.5 kg / 18.7 lbs	8.8 kg / 19.4 lbs	9.1 kg / 10.4 lbs	9.4 kg / 20.7 lbs	9.7 kg / 21.4 lbs

Scanning Sensor Specifications: External Scanner HP-L-20.8		
Maximum point acquisition rate		150 000 points/s
Points per line		Max. 4000
Line rate		Max.100 Hz
Line width range	min.	176 / 104 / 51 / 40 / 20 mm
	mid.	220 / 130 / 63 / 51 / 25 mm
	max.	231 / 148 / 75 / 60w / 30 mm
Stand off		180 mm ± 40 mm
Mininum point spacing		0.013 mm
Laser power control		Fully automatic (per point)
Probing form error (1 σ)		0.009 mm
Probing dispersion value* P[Form.Sph.D95%:Tr:ODS]		0.036 mm
Weight		410 g
Controller		No
Laser safety		Class 2
Working temperature		10-42°C (50-108° F)

ROMER ABSOLUTE ARM APPLICATION SYSTEMS

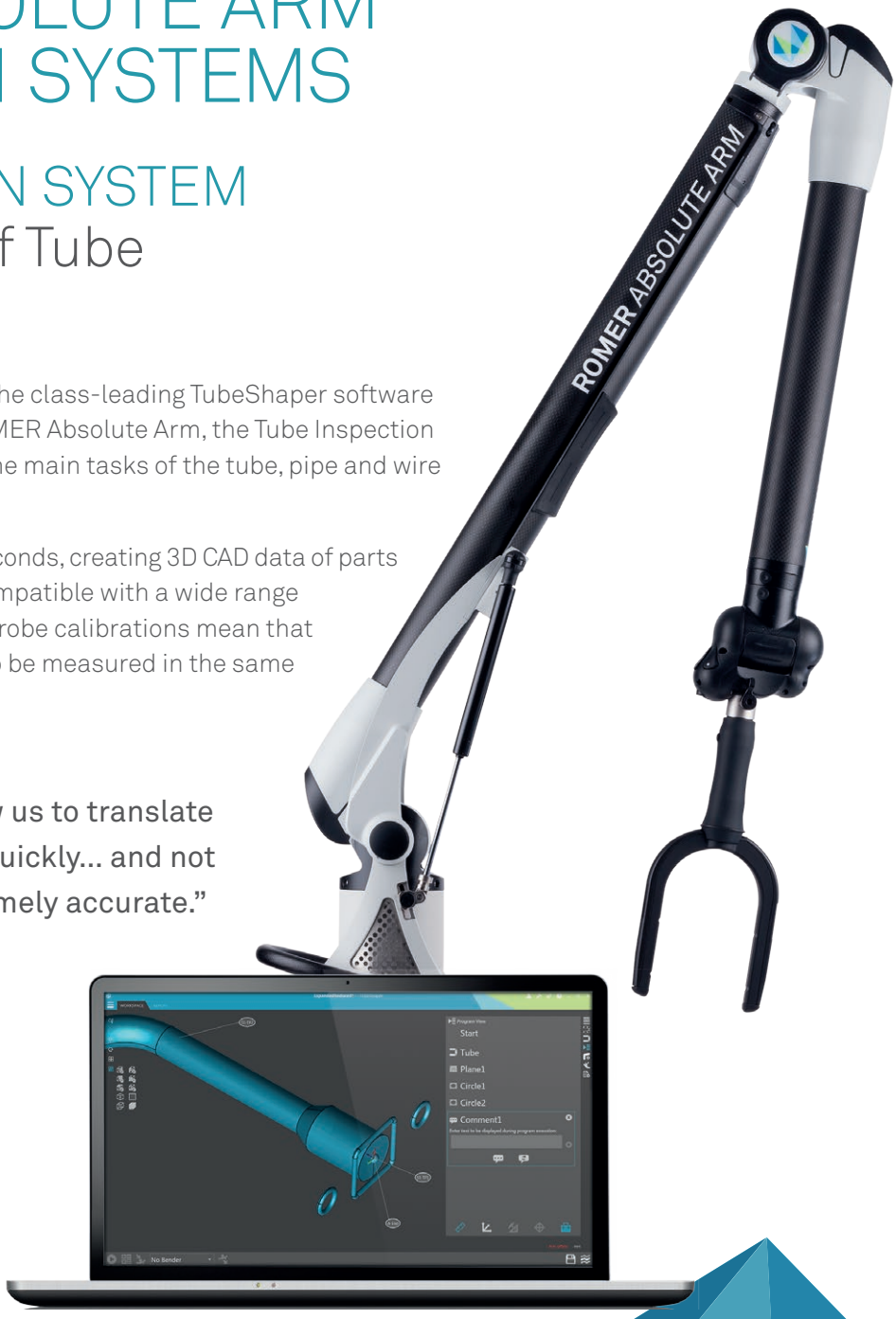
TUBE INSPECTION SYSTEM
The New Shape of Tube Measurement

Adding non-contact tube probes and the class-leading TubeShaper software to the advanced technology of the ROMER Absolute Arm, the Tube Inspection System is the perfect solution for all the main tasks of the tube, pipe and wire production industries.

Even flexible tubes are measured in seconds, creating 3D CAD data of parts and corrected bender programmes compatible with a wide range of CNC tube-bending equipment. No probe calibrations mean that brackets, flanges and fixtures can also be measured in the same software session.

> These tools really allow us to translate a lot of data very very quickly... and not only is it fast, it's extremely accurate."

Wade Brown,
President North America,
Brown and Miller Racing Solutions



ROMER GEAR MEASUREMENT SYSTEM
Gear Inspection Made Simple

The ROMER Gear Measurement System is a completely portable solution that offers fast and simple 3D measurement for gear measurement applications.

The system pairs ROMER Absolute Arm hardware with QUINDOS – the most powerful software on the market for the analysis of special geometries – to allow the easy measurement of complex parts that have previously required complex metrology devices.

ROMER BIKE MEASUREMENT SYSTEM
Effortless Bike Evaluation

The ROMER Bike Measurement System is a completely portable 3D scanning system that gives unrivalled non-contact scanning performance, even on highly reflective carbon-fibre surfaces.

Using dedicated measurement software built on InnovMetric's class-leading PolyWorks®, the system perfectly repurposes leading ROMER Absolute Arm technology for bike measurement applications.

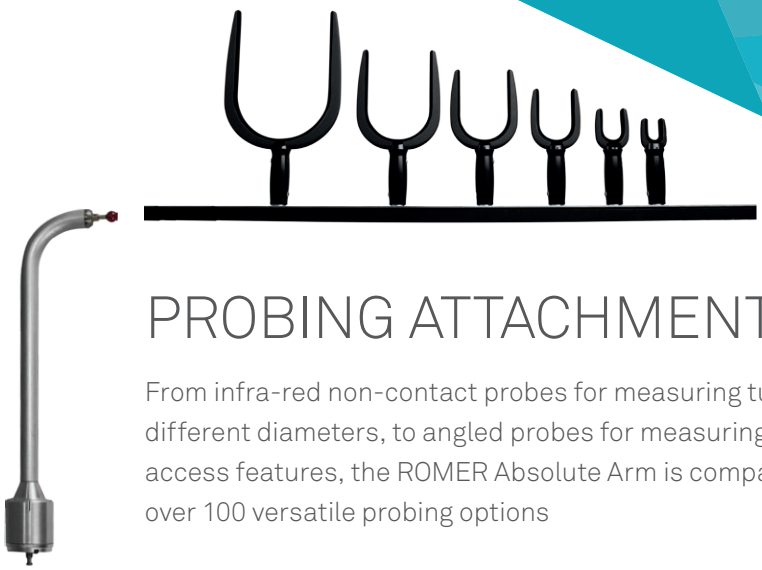
ACCESSORIES
Making the Most of Measurement

All ROMER Absolute Arm models are compatible with a wide range of functional and effective accessories, from scanners and probes to mounting and volume expansion systems.

HP-L-8.9 LASER SCANNER
Enter the World of 3D Scanning

Accessible and user-friendly, the HP-L-8.9 laser scanner can turn ROMER Absolute Arm probing systems (pages 8 to 11) into simple laser scanning solutions. This is the ideal accessory for customers looking add rich point cloud data collection to their metrology capabilities.

HP-L-8.9 Laser Scanner Specifications	
Point acquisition rate	45 000 points/s
Points per line	750
Line rate	60 Hz
Line width (mid-range)	80 mm
Stand-off	135 mm +/- 45 mm
Minimum point spacing	0.08 mm
Accuracy	40 µm (2 σ)



PROBING ATTACHMENTS

From infra-red non-contact probes for measuring tubes of different diameters, to angled probes for measuring difficult to access features, the ROMER Absolute Arm is compatible with over 100 versatile probing options

MOUNTING OPTIONS

A selection of bases, tripods and stands compatible with every ROMER Absolute Arm, attachable through the specially designed ROMER Mounting Ring.

LARGE VOLUME MEASUREMENT

Volume expansion accessories allow the ROMER Absolute Arm to measure parts and objects beyond its standard reach.

Extended measurement can be achieved with a Leap Frog Kit that allows the arm to measure from different stations. For more demanding applications, the ROMER GridLOK system creates an expanded measurement arena within which the arm can be repositioned anywhere with no undue loss of accuracy.

Measurements made with the ROMER Absolute Arm are more accurate than those gathered with previous inspection techniques.”

Doug Duchardt,
Hendrick Motorsports,
Concord, North Carolina, United States

DEFINING ABSOLUTE ACCURACY
Central to Excellent Measurement

Accuracy is key at Hexagon Manufacturing Intelligence. We use several comprehensive tests to define the accuracy of every ROMER Absolute Arm model, each designed to ensure users can be absolutely certain of the accuracy level their portable measuring arm provides.

Point Repeatability Test

Reference test to determine measurement arm repeatability with a ball probe. The cone is in front of the machine. Points are measured from multiple approach directions. The average point and the deviation of each point to the average centre are calculated. The result is the maximum range divided by two.

Volumetric Accuracy Test

Most accurately represents the reasonable expectations for machine performance in practical measuring applications. It involves measuring a certified length standard many times in several locations and orientations and compares the resultant measurements to the actual length. The Volumetric Accuracy Test is the most appropriate test for determining machine accuracy and repeatability. The result is the maximum deviation of the measuring distance less the theoretical length.

All probing specifications are achieved with a ROMER Absolute Arm mounted on a base plate or magnetic base and using a 15 millimetre steel ball probe with a length of 50 millimetre under stable environmental conditions.

Scanning System Accuracy Test

Most accurately represents the reasonable expectations for machine performance in practical measuring applications using a laser scanner. The test involves measuring a matte grey sphere with five different arm articulations. In each articulation of the arm the sphere is scanned from five different directions such that the majority of the sphere is scanned. The result is the maximum 3D centre-to-centre distance of the five spheres.

Certification

Every ROMER Absolute Arm carries full B89.4.22 certification across the entire arm and probe and/or scanner system. Alternative certifications are available for probing functions, according to the VDI/VDE 2617-9 and, for the ROMER Absolute Arm Compact, ISO 10360-2 standards.

APPLICATIONS
Ready for Anything

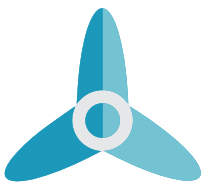
The ROMER Absolute Arm range provides measurement solutions that a relevant across a wide range of industries and applications.

Industries

- Automotive
- Aerospace
- Power generation / wind energy
- Forming industry
- Casting and forging
- Fabricated metal products
- Machinery manufacturing
- Sports equipment
- Piping and tubing
- Agriculture and heavy equipment
- Ship and boat building
- Railways
- Archaeological and historic preservation
- Precision machining
- Tooling and dies
- Medical

Applications

- Sheet metal inspection
- Mould tool inspection
- Flush and gap analysis
- Jigs/fixture set-up and alignment
- Build and inspect
- Tube and tube assembly inspection
- CAD-to-part comparison
- Reverse engineering
- Virtual assembly
- On-machine verification (OMV)
- Composite inspection
- Maintenance, repair and overhaul (MRO)
- Machined part inspection
- In-process quality checks
- Digitising / virtual archiving

ESSENTIAL INFORMATION

Operating conditions

Working temperature:	0°C to 50°C (32°F to 122°F)
Storage temperature:	-30°C to 70°C (-22°F to 158°F)
Relative humidity:	10% to 90% non-condensing
Operational elevation:	0 to 2000 m (0 to 6600 ft)

Marks of conformity

CE Compliance

Power requirement

Universal worldwide voltage: 110 V to 240 V

SI designates the ROMER Absolute Arm with integrated scanner

SE designates the ROMER Absolute Arm with external scanner

"We're now finding applications for it that we hadn't even imagined before."

Kristan Bromley,
World Skeleton Champion and President of
Bromley Technologies, Rotherham, United Kingdom

HEXAGON
MANUFACTURING INTELLIGENCE

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, our expertise in sensing, thinking and acting – the collection, analysis and active use of measurement data – gives our customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

Through a network of local service centres, production facilities and commercial operations across five continents, we are shaping smart change in manufacturing to build a world where quality drives productivity. For more information, visit **HexagonMI.com**.

Hexagon Manufacturing Intelligence is part of Hexagon (Nasdaq Stockholm: HEXA B; **hexagon.com**), a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.

- COORDINATE MEASURING MACHINES
- 3D LASER SCANNING
- SENSORS
- PORTABLE MEASURING ARMS
- SERVICES
- LASER TRACKERS & STATIONS
- MULTISENSOR & OPTICAL SYSTEMS
- WHITE LIGHT SCANNERS
- METROLOGY SOFTWARE SOLUTIONS
- CAD / CAM
- STATISTICAL PROCESS CONTROL
- AUTOMATED APPLICATIONS
- MICROMETERS, CALIPERS AND GAUGES