

ROMER Absolute Arm
Maximum performance
portable measurement

ROMER

Metrology on the go.



 **HEXAGON**
METROLOGY



The ROMER Absolute Arm. Absolutely groundbreaking.

ROMER portable measuring arms have fundamentally changed coordinate metrology by going where traditional measuring machines can't. For workpieces that are large, difficult to move, or cannot be moved to an offline inspection station, dimensional inspection at the point of production is essential. With ROMER arms, you take the CMM to the part, instead of taking the part to the CMM. The ability to quickly measure parts wherever and whenever required allows manufacturers to ensure quality, control processes, reduce scrap and eliminate re-work.

With more than twenty years of development in portable arm technology, ROMER products lead the industry with innovative, lightweight systems designed to make portable metrology fast, easy and affordable. Manufacturers in more than 100 industries worldwide rely on ROMER products to deliver essential inspection information quickly in circumstances where traditional measuring methods are impractical or impossible.

The ROMER Absolute Arm is the latest ROMER innovation. Drawing design inspiration from the entire Hexagon Metrology product family, and all ROMER arms that came before, the ROMER Absolute Arm is the lightest, most accurate, most flexible ROMER arm ever.

ROMER – absolutely portable CMMs.

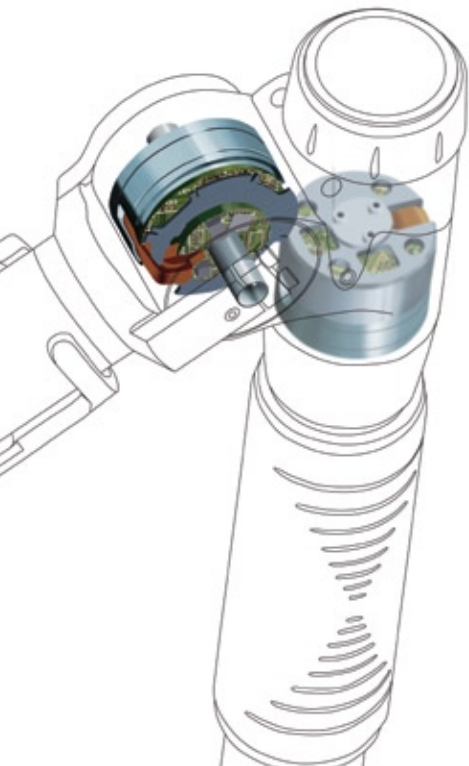


Typical Measuring Applications

- Plate and Fabricated Metal
- Stamped and punched metal components
- Molded parts
- Dies, molds, forms and patterns
- Structural and ornamental metalwork
- Composite materials
- Machined castings
- Tubes and tube assemblies
- Vehicle body and chassis
- Tanks/Boilers
- Fiberglass structures

Typical Industries

- Automotive OEM and components
- Automotive Interiors
- Aerospace OEM and components
- Heavy Equipment OEM and components
- Ship and Boat Building
- Defense OEM and parts
- Machinery Manufacturing
- Furniture Manufacturing
- Civil Engineering
- Windpower OEMs
- Appliances



ROMER Technology. Measurable Benefits.

By definition, portable metrology devices must be accurate and reliable in less than favorable production conditions. The core technologies used to build every Absolute Arm were chosen based on the experience of thousands of units in the field that must be reliable and accurate in real-world use. Innovative new technologies have been added based on their proven performance in other Hexagon Metrology products. With the new Absolute Arm, ROMER delivers maximum innovation with minimum risk.

1 Absolute Encoders

A first in the world of portable measuring arms: The ROMER Absolute Arm features proprietary absolute encoders in its primary axes, so the arm always "knows" the position of its joints. The result is the first portable measuring arm which does not require any kind of homing procedure before starting measurement. When the arm is turned on, it's ready to go.

2 Lighter, Stiffer, More Accurate

From the carbon fiber tubes to the simplified dual yoke joint housings, the Absolute Arm was designed to be the lightest, yet stiffest ROMER arm we've ever built. The base 2.5 meter arm weighs just 17 pounds, fifteen percent lighter than similar 2.4 meter arms. Combined with the improved accuracy from the absolute encoders, it's also the most accurate ROMER arm to date.

3 Absolute Flexibility

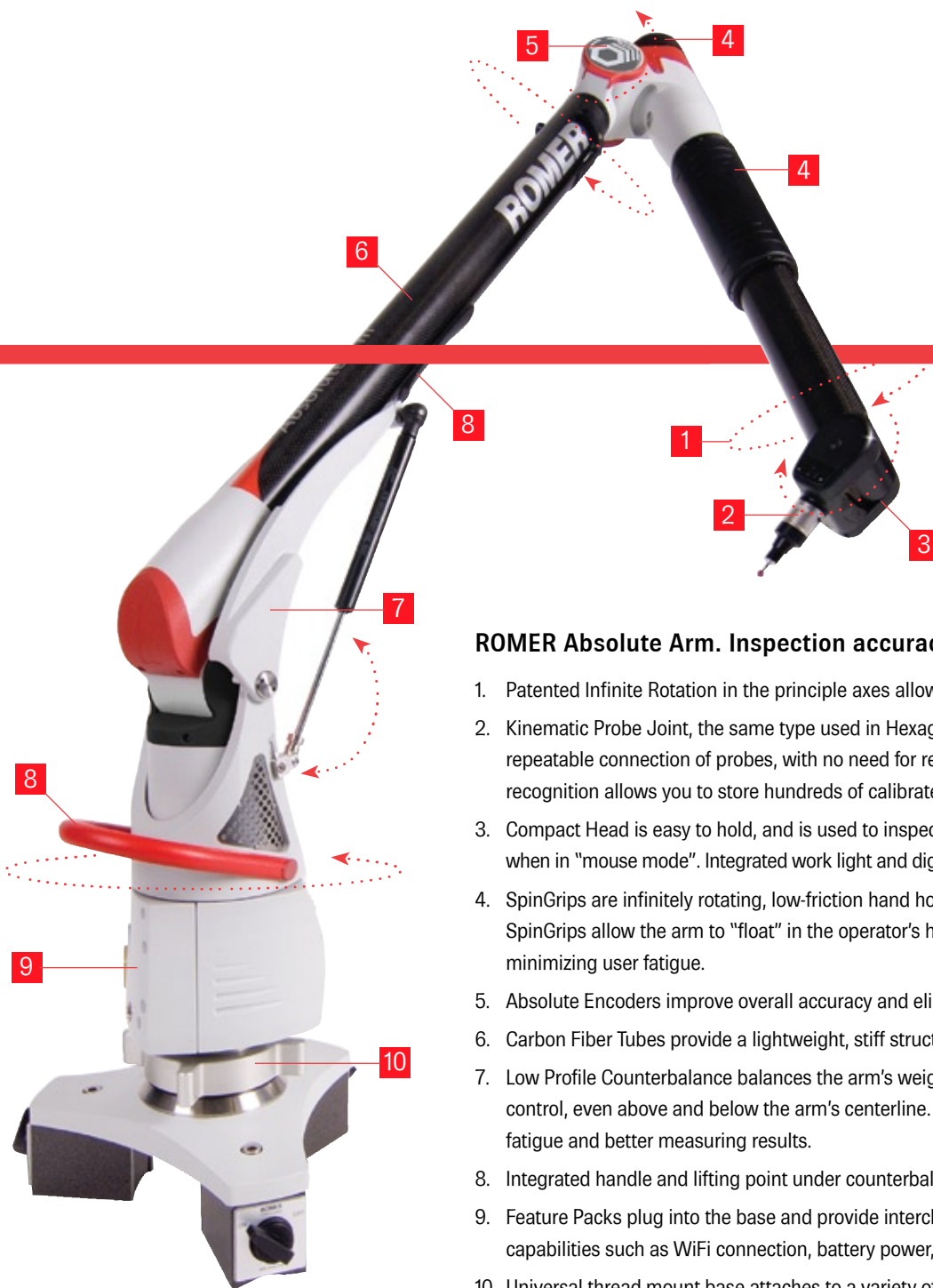
The all-new ROMER Feature Pack concept unfolds the full potential of a portable measuring arm. Utilizing a common docking connector to the base of the arm, feature packs allow you to add, remove, or change features on an arm as required. As new feature packs are released, an Absolute Arm can be upgraded in the field with new capabilities.

Feature Pack Options for 6-Axis Absolute Arms:

- Mobility Pack: A rechargeable battery and WiFi transmitter allows completely wireless use of the Absolute Arm.
- "No Pack" Option: The Absolute Arm is completely functional without a feature pack, using a 110/220v power connection.

RDS Communication

The new RDS arm communication and diagnostics software runs in the Windows notification area and is instantly available whenever needed. Intuitive program operation facilitates probe calibration management and includes a diagnostics function for checking the measuring accuracy of the arm.



ROMER Absolute Arm. Inspection accuracy in its most mobile form.

1. Patented Infinite Rotation in the principle axes allows access to difficult to reach areas.
2. Kinematic Probe Joint, the same type used in Hexagon Metrology bridge CMMs, provides repeatable connection of probes, with no need for recalibration. Automatic probe recognition allows you to store hundreds of calibrated probe profiles for instant recall.
3. Compact Head is easy to hold, and is used to inspect parts or to interact with the software when in "mouse mode". Integrated work light and digital camera graphically document setups.
4. SpinGrips are infinitely rotating, low-friction hand hold positions for better user ergonomics. SpinGrips allow the arm to "float" in the operator's hands, maximizing accuracy and minimizing user fatigue.
5. Absolute Encoders improve overall accuracy and eliminate complicated "homing" procedures.
6. Carbon Fiber Tubes provide a lightweight, stiff structure that is thermally stable.
7. Low Profile Counterbalance balances the arm's weight for easy operation with effortless control, even above and below the arm's centerline. Better ergonomics means lower operator fatigue and better measuring results.
8. Integrated handle and lifting point under counterbalance allow for easy carrying.
9. Feature Packs plug into the base and provide interchangeable and upgradeable add-on capabilities such as WiFi connection, battery power, and more.
10. Universal thread mount base attaches to a variety of available base and stand options including magnetic bases.

ROMER Return On Investment

ROMER arm systems produce results you can measure. Many ROMER owners discover benefits so dramatic, the return on investment can be calculated in months, not years. Benefits may include:

- Faster and more accurate inspection than traditional manual methods.
- Replacement of costly and inflexible dedicated gaging.
- Reduced setup time for machines or fixtures.
- Minimizing production wait time because results are available faster.
- Scrap and rework reductions via in-process or on-machine inspection.
- More efficient documentation, eliminating manual data entry.





Configurations

	73 Series	75 Series
Zero G Counterbalance with Lock	Standard	Standard
SpinGrips	N/A	Standard
TESA TKJ Connector	Standard	Standard
3 TESA Hard Probes	Standard	Standard
Feature Pack	Optional	Mobility Pack
Digital Camera	N/A	Standard
LED Worklight	N/A	Standard
Calibration Sphere	Standard	Standard
NIST Traceable Length Standard Bar	Optional	Standard
Hard Case	Standard	Standard
Dust Cover	Standard	Standard
Base	Bolt-down base plate	Magnetic
Application Software	PC-DMIS Portable	PC-DMIS Portable
Utility Software	RDS	RDS

Performance Data	Model	Measuring Range	Point Repeatability	Volume Length Accuracy	Arm Weight
73 Series	7315	4.9 ft. (1.5 m)	0.0010 in. (0.025 mm)	0.0015 in. (0.037 mm)	15.6 lbs. (7.1 kg)
	7320	6.6 ft. (2.0 m)	0.0012 in. (0.030 mm)	0.0017 in. (0.042 mm)	16.3 lbs. (7.4 kg)
	7325	8.2 ft. (2.5 m)	0.0015 in. (0.038 mm)	0.0020 in. (0.051 mm)	17.0 lbs. (7.7 kg)
	7330	9.8 ft. (3.0 m)	0.0026 in. (0.065 mm)	0.0037 in. (0.095 mm)	17.6 lbs. (8.0 kg)
	7335	11.5 ft. (3.5 m)	0.0037 in. (0.095 mm)	0.0051 in. (0.130 mm)	18.3 lbs. (8.3 kg)
	7340	13.1 ft. (4.0 m)	0.0047 in. (0.120 mm)	0.0059 in. (0.149 mm)	19.0 lbs. (8.6 kg)
	7345	14.8 ft. (4.5 m)	0.0059 in. (0.150 mm)	0.0067 in. (0.170 mm)	19.6 lbs. (8.9 kg)
75 Series	7520	6.6 ft. (2.0 m)	0.0006 in. (0.016 mm)	0.0009 in. (0.023 mm)	17.0 lbs. (7.7 kg)
	7525	8.2 ft. (2.5 m)	0.0008 in. (0.020 mm)	0.0011 in. (0.029 mm)	17.6 lbs. (8.0 kg)
	7530	9.8 ft. (3.0 m)	0.0013 in. (0.033 mm)	0.0019 in. (0.049 mm)	18.3 lbs. (8.3 kg)
	7535	11.5 ft. (3.5 m)	0.0017 in. (0.043 mm)	0.0024 in. (0.061 mm)	19.0 lbs. (8.6 kg)
	7540	13.1 ft. (4.0 m)	0.0024 in. (0.061 mm)	0.0030 in. (0.075 mm)	19.6 lbs. (8.9 kg)
	7545	14.8 ft. (4.5 m)	0.0028 in. (0.070 mm)	0.0032 in. (0.082 mm)	20.3 lbs. (9.2 kg)

Specifications are subject to change without notice. Go to <http://us.romer.com> for latest information.

Working temperature: 0°C – 50°C (32°F – 122°F)

Storage temperature: -30°C – 70°C (-22°F – 158°F)

Humidity: 10% – 90% non-condensing

Operational elevation: 0-6600 ft. (0-2000 m)

Power requirement: Universal worldwide voltage 110-240

Certification: CE compliant

Point Repeatability Test (also known as Single Point Articulation Test, or S.P.A.T.):

Results analyzed via Range/2 method. The probe is placed within a trihedral seat or conical socket, and individual points are measured from multiple approach angles with maximum articulation of all of the principal joints. Each individual point measurement is analyzed as a range of deviations about the average value for the point locations. This test is to assess the arm's ability to provide similar values of a point coordinate, when the arm is articulated through the maximum possible range of motion for that single point.

Volumetric Performance Test: Results analyzed via Range/2 method. Volumetric length

accuracy is determined by using certified length standards (included with all arms) that are measured at various locations and orientations throughout the measuring volume. This test most accurately represents the reasonable expectations for machine performance in practical measuring applications. The Volumetric Length Accuracy Test is the most appropriate test for determining machine accuracy and repeatability since it involves measuring a certified length standard many times in several locations and orientations and compares the resultant measurements to the actual length.



PC-DMIS® Portable

With the world's largest installed base of any measurement and inspection software, PC-DMIS is the ideal match for ROMER portable CMMs. PC-DMIS Portable is fast and intuitive to learn, especially for users already familiar with the PC-DMIS environment on any type of measuring device. Used for portable inspection with or without a CAD model, the powerful capabilities of PC-DMIS deliver inspection information quickly and accurately.

The PC-DMIS Portable interface is specifically designed for the arm user, with larger menus, buttons, and a virtual keyboard which allows direct interaction with PC-DMIS without touching the computer when using the arm in "mouse mode". PC-DMIS Portable makes it easy for operators to inspect parts in comparison to CAD models in real-time, generate inspection programs and produce clear, concise CAD-to-part reports.

Quick Start GUI — Commonly used functions are grouped together into one compact interface for ease and speed of access.

Automatic Programming — Part programs are automatically created during inspection, for recall and later re-use. Guided inspection routines with visual cues and comments are easily created for repetitive inspections.

Guess Mode — PC-DMIS automatically recognizes feature types as you measure — just measure a circle and it's recognized as a circle.

Automatic Nominals — Feature nominal values are automatically retrieved from the CAD file during measurement, no manual data entry is required.

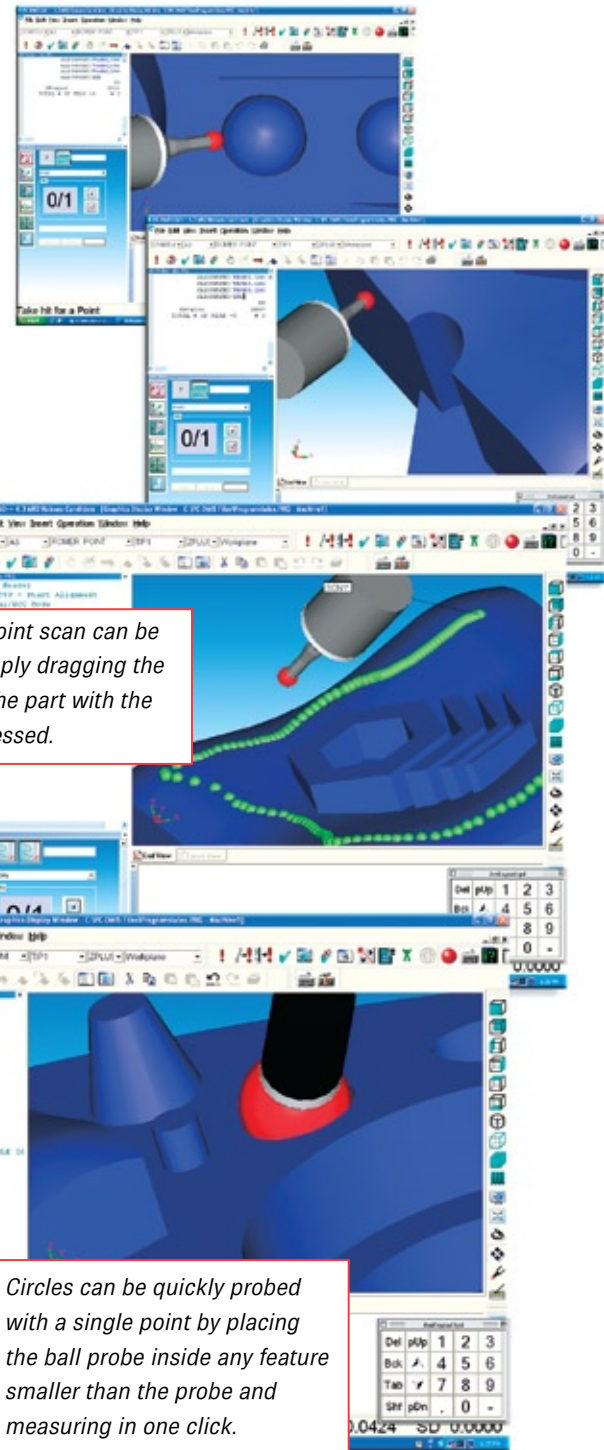
Any-Order Measure™ — Lets operators probe parts in the most convenient and efficient order without having to follow the steps of an inspection routine. The software keeps track of what is measured and only evaluates dimensions when all of the necessary information is available.

Aligning contoured parts — PC-DMIS Portable quickly aligns even the most complex parts. A range of algorithms for best fit and iterative alignments are included.

Sheetmetal measurements — PC-DMIS Portable offers an optional library of sheetmetal measurement routines.

CAD File Compatibility — PC-DMIS has translators for all major CAD formats, plus optional direct CAD interfaces, which read and use the native CAD formats, without translation.

Customizable reporting tools — Customizable inspection reports are created automatically. Compatibility with Microsoft Excel™, PDF and RTF formats. Data for SPC analysis can be automatically transferred in real time to the PC-DMIS DataPage+ SPC package.



A multiple point scan can be taken by simply dragging the probe over the part with the button depressed.

Circles can be quickly probed with a single point by placing the ball probe inside any feature smaller than the probe and measuring in one click. Square or round slots can be measured with just two clicks.



ROMER Customers Explain the Benefits of Portable Metrology

Portable metrology users across many industries use ROMER arms for many different reasons, to solve a wide variety of manufacturing problems.

Here are some of their experiences:

Improving Speed and Flexibility

"The complexity of the exterior lighting designs has increased, with flowing shapes and compound angles it makes it important that we find the best ways to integrate these with the body during assembly so that the fit is correct from the beginning. We use a lot of portable technology like the ROMER arms in these problem-solving activities in part because of the portability."

— Chris Purdy, GM Manufacturing Engineering 3D Scanning Group

"The ROMER PCMM allows us to measure complex parts in a greatly simplified manner. Measurements that were often time consuming and difficult are now fast and easy. When we are able to inspect parts faster, it affects our overall productivity. When a machinist brings me a complete part, I can get back to them very quickly to tell them if their setup is good, so they can continue running the part. You do not want a machine or an operator sitting idle for long."

— Greg Steele, Quality Inspector, Hycomp Compressor

"The arm's versatility sold itself. Our 3D Measurement capability sped up our in-process inspection and delivery has increased"

— John Hamel, Quality Assurance Manager, Astronics-Luminescent Systems, Inc.

Scrap and Cost Reduction

"When we consider ROI on this purchase, we have reduced setup on inspection by nearly 40%. Just a few years ago, our scrap per unit produced was at its historical lowest level. This year, we have lowered the rate down to 1/6 of what it was."

— Joe Dombkowski, Forge Manager, Smith & Wesson

"The ROMER system comes into play every day to verify dimensional controls that were implemented [on the Car of Tomorrow chassis] for safety and cost containment"

— Jerry Kaproth, Safety Coordinator, NASCAR

Product Design & Development Enhancement

"Time to market is one of our biggest pushes; we cannot take five or six years to design a product. Giving the engineer a tool that would allow them to spot check their products immediately appealed to the group. For continuous improvement and shortening time to market, work simply can not sit around in the queue. So the self-serve model without the programming upfront is key to our effort."

— Alex Rizzuti, Lead Engineer, ESCO Corporation

"For this type of work, it is definitely an advantage to have an arm. You can get an idea, go measure it, and have your results in just a couple of minutes. On the other machine, you have to consider what you want to measure, how you are going to measure it, write an inspection program, and then finally in the fullness of time, you get can get results."

— John C. Ziegert, Professor, Clemson University International Center for Automotive Research

ROMER

Responding to needs throughout industry for portable, flexible solutions for measurement and inspection applications, ROMER's co-founder patented and marketed the first multi-axis articulated arm for tube inspection in 1973. Today's ROMER arms are direct descendants of that first invention. Decades of continuous innovation have made ROMER products the technological leader in the portable arm market.

Portable coordinate measuring machines for industrial production, assembly, research and development is the ROMER brand's specialty in the global Hexagon Metrology offering. The power of Hexagon Metrology's global sales, service and support network ensures that your investment in ROMER products is secure no matter where in the world your business takes you.

ROMER. Metrology on the go.

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