

ROSA[®]

Knee System



ROSA[®] KNEE

Predictive Planning, Precise Performance

Designed by surgeons for surgeons, the ROSA[®] Knee System provides objective soft tissue feedback and accurate bone resections, which aim to restore a patient's natural knee. ROSA Knee collects intra-operative metrics to inform your decision-making and provide data-driven insights, so you can focus on achieving the optimal outcome for each patient.

Combining ZBEdge[™] integrated technologies with the clinical heritage of our comprehensive implant systems, Zimmer Biomet is revolutionizing the standard of care.



SURGEON-CENTERED¹⁻³



ACCURATE⁴⁻⁶



EFFICIENT^{7,8}



DATA-DRIVEN

When compared to a manual TKA group, ROSA Knee was associated with the same complication risk, less pain level, better patient satisfaction and PROMs at 6-month follow-up.⁹

SURGEON-CENTERED

ROSA Knee allows you to maintain your current approach, philosophy and surgical technique, including Personalized Alignment™.

Quantify Previously Subjective Information

Factoring in soft tissue balance is not a new concept in knee replacement, but finding the right soft tissue balance with static, traditional instruments is highly subjective. With ROSA Knee, surgeons can objectively measure soft tissue and predictively plan a balanced knee replacement before performing any resections.

Easy to Integrate with Minimal Learning Curve

The initial learning curve for the ROSA Knee System can be achieved in 6–11 cases for operative time and has similar 90-day complication rates with improved implant alignment compared to manual instrumentation in TKA.¹⁰

Offering an Enhanced TKA Surgical Experience

Total Knee Arthroplasty with robotic surgical assistance results in less physician stress and strain than conventional methods.¹¹

Perform a variety of approaches with ROSA Knee:

Measured
Resection

Gap
Balancing

Hybrid
Approach

Personalized
Alignment

ROSA Knee Medical Education

Training and education on the safe and effective use of our products is important as we all work to better the lives of your patients. We're here for you. With in-person courses, digital events, surgeon-to-surgeon experiences (remote available), virtual reality offerings and on-demand videos, the Zimmer Biomet Institute was developed to provide you with detailed product knowledge to further pursue your goals of maximizing patient outcomes.



**SCAN TO
LEARN MORE**

Implants Designed to Improve Outcomes

Technologies are only as good as the implants they are used with. ROSA Knee supports our three leading knee brands: NexGen®, Vanguard® and Persona® The Personalized Knee®, including the Persona® OsseoTi® Keel Tibia.

The Persona Knee System is Zimmer Biomet's most comprehensive primary knee system, incorporating personalized implants, precise instrumentation and proven technology.¹²⁻¹⁶

- It's built on the heritage of our NexGen Knee System, the most widely used and clinically proven total knee system in the world.¹⁷
- Trabecular Metal™ Technology and Vivacit-E® HXPLE Material provide clinically proven solutions to help improve efficiency and implant longevity.¹²⁻¹⁶



Persona[®]
THE PERSONALIZED KNEE

ACCURATE

Delivers Highly Accurate Resections and Limb Alignment⁶

A recent in vivo study reported that:

- The average difference between the planned and executed resections for all measurements was $<1^\circ$ and <1 mm with standard deviations <1 for each.
- The average difference between planned and executed hip-knee-ankle (HKA) angle was $1.2^\circ \pm 1.1^\circ$.



Improved Precision and Accuracy Versus Conventional Instrumentation⁵

- ROSA Knee offers surgeons precision and accuracy of resections.⁴⁻⁶ In the 2020 Seidenstein et al. study comparing conventional versus robotic instrumentation, 25% of knees were outside of $\pm 3^\circ$ of the planned alignment when conventional instrumentation was used. However, all robotic cases using the ROSA Knee System were within $\pm 3^\circ$ of planned alignment.⁵
- Additionally, the system's live cut values and cut validation features are designed to confirm proper alignment in real time.



EFFICIENT^{7,8}

Flexible Imaging Options

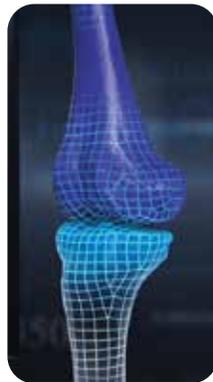
Based on surgeon preference, ROSA Knee offers both image-based and imageless options for greater flexibility.

- The imageless option eliminates the time for image acquisition and pre-operative plan preparation, can address reimbursement concerns, limit patients' exposure to radiation and minimize scheduling requirements.

While some surgeons opt for the operational efficiency of working imageless, others appreciate the benefits of utilizing image-based cases with **X-Atlas® 2D to 3D Technology**. Additionally, X-Atlas Technology has been shown to more accurately predict tibial and femoral component sizes compared with 2D digital templating.⁷



2D X-rays are submitted to your assigned Personalized Solutions planning expert



X-rays are transformed into a digital, 3D replication of the patient's anatomy

A plan is created and displayed on the ROSA Knee user interface based on the patient-specific bone model



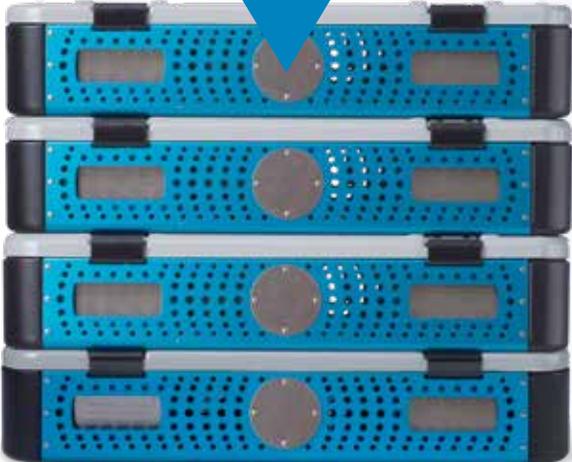
Reduced Instrumentation

The Efficient Care program and X-Atlas Technology lowers the cost to serve through experienced case planning and unique modular instrument trays that provide you with all the instrumentation you need – while eliminating the instruments you don't.

POTENTIAL SAVINGS¹⁸
FOR EACH CASE



Six Trays



Four Trays

DATA-DRIVEN

Making the best decision when it matters requires data-driven intelligence.

ROSA Knee, a cornerstone of ZBEdge™ Dynamic Intelligence™, is an integral part of creating a comprehensive view of orthopedic care informed by data.

Meaningful Connections to Unlock Insights

ZBEdge is Dynamic Intelligence with the power to elevate and unlock the full potential of Zimmer Biomet's cutting-edge suite of integrated digital technologies, robotics and implant solutions.

PRE-OPERATIVE



INTRA-OPERATIVE



POST-OPERATIVE



MEANINGFUL DATA



ZBEdge™

by  ZIMMER BIOMET



ZBEdge™
PRIVACY

DATA PRIVACY

**AT ZIMMER BIOMET, THE PATIENT IS ALWAYS THE PATIENT,
AND NEVER THE PRODUCT.**

We accept the responsibility that comes along with the new age of data transformation and we are committed to protecting the patient's privacy.

Our dedicated teams of privacy professionals work to support Zimmer Biomet's data protection obligations, data management and use.

References

1. Lonner H, Jess. A Personal Journey through, and review of, the Landscape of Surgical Robotics in Knee Arthroplasty: My Transition from Mako® to NAVIO™ and finally to the ROSA® Knee System. *Journal of Orthopaedic Experience & Innovation* 2022.
2. Alessi A, Fitzcharles E, Weber IC, Cafferky NL. The Functionality of a Novel Robotic Surgical Assistant for Total Knee Arthroplasty: A Case Series. *Case Reports in Orthopedics*. 2021;2021:6659707.
3. Rossi SMP, Benazzo F. Individualized alignment and ligament balancing technique with the ROSA® robotic system for total knee arthroplasty. *International Orthopaedics*. 2023;01/04 2023;doi:10.1007/s00264-022-05671-z
4. Parratte S, Price AJ, Jeys LM, Jackson WF, Clarke HD. Accuracy of a New Robotically Assisted Technique for Total Knee Arthroplasty: A Cadaveric Study. *J Arthroplasty*. 2019;34(11):2799-2803. Study funded by Zimmer Biomet.
5. Seidenstein A, Birmingham M, Foran J, Ogden S. Better accuracy and reproducibility of a new robotically-assisted system for total knee arthroplasty compared to conventional instrumentation: a cadaveric study. *Knee Surg Sports Traumatol Arthrosc*. 2020 Mar;29(3):859- 866. doi: 10.1007/s00167-020-06038-w. Epub 2020 May 24. PMID: 32448945. Study funded by Zimmer Biomet.
6. Rossi SMP, Sangaletti R, Peticarini L, Terragnoli F, Benazzo F. High accuracy of a new robotically assisted technique for total knee arthroplasty: an in vivo study. *Knee Surg Sports Traumatol Arthrosc*. 2022 Jan 4:1-9. doi: 10.1007/s00167- 021-06800-8. Epub ahead of print. PMID: 34981162; PMCID: PMC8723813.
7. Klag EA, Lizzio VA, Charters MA, et al. Increased Accuracy in Templating for Total Knee Arthroplasty Using 3D Models Generated from Radiographs. *J Knee Surg*. 2022
8. Masse V, Ghate RS. Using standard X-ray images to create 3D digital bone models and patient-matched guides for aiding implant positioning and sizing in total knee arthroplasty. *Comput Assist Surg (Abingdon)*. 2021;26(1):31-40.
9. Kenanidis, E., Paparoidamis, G., Milonakis, N. et al. Comparative outcomes between a new robotically assisted and a manual technique for total knee arthroplasty in patients with osteoarthritis: a prospective matched comparative cohort study. *Eur J Orthop Surg Traumatol* (2022).
10. Vanlommel L, Neven E, Anderson MB, Bruckers L, Truijen J. The initial learning curve for the ROSA(R) Knee System can be achieved in 6-11 cases for operative time and has similar 90-day complication rates with improved implant alignment compared to manual instrumentation in total knee arthroplasty. *J Exp Orthop* 2021; 8(1): 119. Study funded by Zimmer Biomet.
11. Haffar A, Krueger CA, Goh GS, Lonner JH. Total Knee Arthroplasty With Robotic Surgical Assistance Results in Less Physician Stress and Strain Than Conventional Methods. *The Journal of Arthroplasty* 2022. Study funded by Zimmer Biomet.
12. Zhang, Y., et al. Interfacial Frictional Behavior: Cancellous Bone, Cortical Bone, and a Novel Porous Tantalum Biomaterial. *Journal of Musculoskeletal Research*. 3(4); 245-251, 1999.
13. Bobyn, J.D., et al. Characteristics of Bone In-growth and Interface Mechanics of a New Porous Tantalum Biomaterial. *Journal of Bone and Joint Surgery (British)*. 81-B(5): 907, 1999.
14. Shirazi-Adl, A., et al. Experimental Determination of Friction Characteristics at the Trabecular Bone / Porous-coated Metal Interface in Cementless Implants. *The Journal of Biomedical Research*. 27: 167- 175, 1993.
15. Levine, B. et al. Experimental and Clinical Performance of Porous Metal Tantalum in Orthopedic Surgery. *Biomaterials*. 27: 4671-81, 2006.
16. Zimmer ZRR_WA_2537_12.
17. Statement based on: 5 million implantations^{17h} 300+ Publications^{17g} 100% Survivorship at 17 Years^{17a} Lowest revision rate^{17b} Benchmark for PROMs^{17f} 10A* ODEP rating for CR and PS knees both with and without patella^{17e} Every 90 seconds a patient receives a NexGen knee¹⁷ⁱ 1 in 5 knees implanted globally is a NexGen Knee¹⁷ⁱ
 - 17a. Kim, Y.H., et al. Cementless and cemented total knee arthroplasty in patients younger than fifty five years. Which is better? *International Orthopaedics (SICOT)* (2014) 38:297-303.
 - 17b. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide.AOA 2016: Table KT9 Cumulative Percent Revision of Primary Total Knee Replacement with Cement Fixation.
 - 17c. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide.AOA 2016: Table KT10 Cumulative Percent Revision of Primary Total Knee Replacement with Cementless Fixation.
 - 17d. Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide. AOA 2016: Table KT11 Cumulative Percent Revision of Primary Total Knee Replacement with Hybrid Fixation.
 - 17e. Select variants from the 2016 Swedish National Registry available at <http://myknee.se/en/> (pgs 42-43).
 - 17f. Baker, P.N., et al. The effect of surgical factors on early patient-reported outcome measures (PROMs) following total knee replacement. *J Bone Joint Surg Br*. 94:1058, 2012.
 - 17g. Latest ODEP ratings can be found at <http://www.odep.org.uk>.
 - 17h. 2015 Sales data available at Zimmer Biomet.
 - 17i. EMBASE search: «NexGen» AND «Knee».
18. Persona® Instrument Tray Reduction. November 2018.

This material is intended for health care professionals. Distribution to any other recipient is prohibited.

For indications, contraindications, warnings, precautions, potential adverse effects and patient counseling information, see the package insert or contact your local representative; visit www.zimmerbiomet.com for additional product information.

All content herein is protected by copyright, trademarks and other intellectual property rights, as applicable, owned by or licensed to Zimmer Biomet or its affiliates unless otherwise indicated, and must not be redistributed, duplicated or disclosed, in whole or in part, without the express written consent of Zimmer Biomet.

Check for country product clearances and reference product specific instructions for use. Not for distribution in France.

Patients must have internet access and a text-capable mobile device or a compatible smartphone to use mymobility; not all smartphone app features are available with web-based version. Not all patients are candidates for the use of this product and surgeons should evaluate individually to determine which patients are appropriate for therapy at home.

Microsoft and HoloLens are trademarks of the Microsoft Corporation.

©2021, 2022, 2023 Zimmer Biomet



3076.5-GLBL-Issue Date-2023-06



Legal Manufacturer ROSA Knee
ROSA Knee
Zimmer CAS
75 Queen Street, Suite 3300
Montreal (QC)
H3C 2N6, Canada
+1 514 396 5422 or 1 866 3D
ORTHO

canturio™te Exclusive Distributor
Zimmer, Inc.
1800 West Center Street
Warsaw, Indiana 46581-0587
USA

zimmerbiomet.com



canturio™te Legal Manufacturer
Canary Medical USA LLC
2710 Loker Ave. West, Suite 350
Carlsbad, CA 92010
Customer Support: 1-833-692-2627
canarymedical.com



Legal Manufacturer
mymobility App Platform
Zimmer U.S., Inc. Connected
Health 601 5th St. NW
Suite 200
Grand Rapids, MI 49504 USA